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ABSTRACT

A study was conducted of the production, size, growth, and composition of the serial and monograph literature of the social sciences, together with some comparative data from the sciences and humanities. Data on the social science serial literature was obtained by analysis of the Check List of Social Science Serials--a machine readable data base constructed specifically for this project on the design of information systems for the social sciences. A wide range of published and unpublished primary and secondary statistics were used for a variety of other analyses. The analyses of literature growth showed that it is necessary to re-examine the widely held view that the bulk of literature growth has been and will continue to be exponential. Accelerating and exponential growth has occurred in much of the serial literature, but in only a few parts of the monograph literature. Production and growth characteristics in different forms of literature and subjects were compared. The relevance of bibliometric data for the design and management of bibliographic information systems is discussed. Extensive data tables are appended. (Author/PF)

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Design of Information Systems in the Social Sciences

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Size, growth and composition of social science literature

Bath University

March 1975

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SIZE, GROWTH AND COMPOSITION OF SOCIAL SCIENCE LITERATURE

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PREFACE

The research project Design of Information Systems in the Social Sciences (DISISS) was carried out between 1971 and 1975 with the support of a grant from British Library Research and Development Department (formerly, Office for Scientific and Technical Information). The central team was based at the University of Bath, and assisted by researchers at the Polytechnic of North London School of Librarianship, and the Open University. The results of the research are reported in two series of papers. These reports can be obtained individually on loan from the British Library Lending Division, Boston Spa; a limited number are available for purchase from the Secretary, The Library, Bath University, Claverton Down, BATH BA2 7AY.

The purpose of this research report is to provide a mainly quantitative survey of information resources relevant to the social sciences. It covers the size, growth and characteristics of information resources in terms of publications (e.g. serials, monographs, reports, articles, official publications) and bibliographical data bases and data banks (e.g. machine readable files of citations, data archives, etc.).

In keeping with the approach taken in other parts of the DISISS project the report is concerned mainly with bibliographical materials. The study has not been restricted to the social sciences, because comparisons with other subjects are necessary to give a full picture of the social sciences. It is believed that this study is one of the few to deal with the size, growth and characteristics of published literature in a comprehensive fashion; the data and analyses should help to illuminate a topic that has hitherto been characterised by incomplete figures, confused definitions, and inadequate analyses.

The report was prepared and drafted by Mr S.A. Roberts under the general direction of Mr M.B. Line and Mr J.M. Brittain. Collection, editing and processing of data for the Check List of Social Science Serials (CLOSSS) was undertaken largely by Mr D. Nicholas and Ms M. Ritchie of the Polytechnic of North London, with assistance from students. Mr R.G. Bradshaw was responsible for all the computing work associated with the design,

construction and analysis of the CLOSSS machine file. Dr W.Y. Arms (Open University) and Mrs C. Arms contributed advice on various matters throughout the project. Mr Nicholas contributed material to section 4.1 dealing with journal size and section 4.3 dealing with news journals. Mr P. Burridge read through and made comments on the draft at all stages and assisted in the statistical calculations of growth of the literature. Acknowledgement is also due to advice and assistance from other sources including Dr K.P. Barr, Mr A. Sandison and Mr C. Wootton of the British Library.

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ABSTRACT

A study of the production, size, growth and composition of the serial and monograph literatures of the social sciences is presented in this report, together with some comparative data from the sciences and humanities. Data on the social science serial literature was obtained by analysis of the Check List of Social Science Serials (CLOSSS) - a machine readable data base constructed specifically for the DISISS project. A wide range of published and unpublished primary and secondary statistics were used for a variety of other analyses.

The analyses of literature growth show that it is necessary to re-examine the widely held view that the bulk of literature growth has been and will continue to be exponential. Accelerating and exponential growth has occurred in much of the serial literature, and in a few, but certainly not all, parts of the monograph literature. However, there are signs of a levelling off in the rate of growth, particularly in science literature.

Production and growth characteristics in different forms of literature and subjects have been compared. The relevance of bibliometric data for the design and management of bibliographical information systems is discussed.

1.0 INTRODUCTION

1.1 Objectives

A knowledge of the size, growth and composition of the literature of the social sciences is essential to an understanding of the problems of information systems and services, and important in the planning and design of new or improved services. The size of the literature forms one aspect of the study of overlap and coverage in bibliographical services, whilst additional data on language, subject and geographical distribution gives greater depth to such a study. Growth data can be used to highlight differences between subject areas and to identify those areas which may need greater attention or resources. At the very least, measures of size, growth and composition have an intrinsic interest for managers, planners and designers of information services; more important, however, is the need to recognise the value of the data in a programme of practical research such as DISISS, aimed at suggesting changes in the structure of information services in the social sciences.

An accurate prediction of the current growth rate and future size of literature is important to the information system designer, and in future with more accurate data than hitherto available could be of considerable practical value. The relationship between production, size, growth rate and various bibliographical activities is obvious but difficult to spell out precisely, and it may be worth giving the topic more attention in future by studying the growth of information funding and various related variables (user population, number of service units, etc.). Estimates of growth rates have other uses especially in citation analysis and in the solution of various sampling problems (see DISISS Report A3, section 3.0).

Rapid growth could effect the structure of individual secondary services (requiring changes in size, increase in frequency, higher production costs, etc.), as well as the structure of secondary services in general (fewer large ones and more subject-specialized ones). With machine files a large increase could affect the whole design and processing of the files, as well as computer requirements. For the librarian, growth rates are important for future budgeting and space requirements, for instance continued rapid growth may necessitate bringing forward the start of building programmes. In any case figures on size and growth are obvious and basic, and although their calculation often require some effort (except where machine readable serial files contain the required information, they should surely be available on a regular basis, even if practical application of the information may be rather indirect.

rather indirect.

1.2 The concept of 'growth' and the problem of measuring size

This section contains two very important caveats, which should be borne in mind throughout the study. The data collection of this study, and much of the drafting of the report, took place before the end of 1973. At this time, it was still reasonable to think in terms of growth, whether exponential or linear. Since then, rapid changes in the world economic situation, and subsequent reductions in the resources devoted to research and in the market for publication, have made the assumption of growth questionable. It would be more accurate to talk of changes in the size of literature, but as up to very recently these changes have been fairly consistently in the direction of growth, the text of the report has not been altered. It may also be noted that literature is still growing, in the sense of cumulating, even if the amount produced, in successive years remains constant, or indeed has any value above zero. The report must however be read in the knowledge that it refers to a situation which is changing rapidly and perhaps permanently. Future studies of this kind may be of decline rather than growth.

Measures of size and growth are considered in more detail later, separately for serials (section 2.0) and monographs (section 3.0), but it is important to note at the outset the problem of measuring size in a valid way. The commonest measures, because the easiest to calculate, have been of titles, whether of serials or monographs, but these are rather crude measures. For the librarian with a space problem, they tell him little about the physical size of the literature and its changes over time - this depends on number of pages and thickness of paper, as well as page size and bindings. There have in fact, been considerable changes in these factors for a given number of titles, of serials especially but also of monographs. For the student of the growth of knowledge, the number of new contributors to knowledge is of special interest; articles are a much better measure of this than serial titles, while on the other hand most monographs either synthesize knowledge already reported in serials or as report literature, or are not concerned with knowledge in this sense at all - they may be fiction, handbooks, guidebooks, schoolbooks, etc. Title counts have some value as indicators of physical size and of the advancement of knowledge, but their reliability, and the degree and nature of error of these indicators, have not been fully studied. Meanwhile, this study has, like other studies, been able to go little beyond the calculation of titles, though some attempts to do so are reported in section 4.1.

1.3 The growth of literature

Estimating the size and annual production of literature is neither without difficulty nor sometimes without controversy (see section 1.4). In the literature of information science and history of science, however, discussions of the growth of literature have attracted more attention, both because of the need for forecasting to assist library planning and the allocation of research resources, and because the futures predicted by various models of growth have led to controversy in themselves. Much of the debate since the 1950s has revolved around whether or not the literature of science is growing exponentially, and whether or not, if such a trend exists, it will continue. Hitherto most studies of production, size, and growth have dealt with the scientific and technical literature; comparable studies of the social sciences are long overdue.

The occurrence of exponential growth amongst many different phenomena is generally accepted, but there are serious consequences and differences arising from the different rates and time scales in which the phenomenon is concentrated. Scientific literature appears to have been growing rapidly in a relatively short time period. Accordingly, by the 1960s data on scientific literature (serial titles, articles, pages, words, etc.) plotted on an arithmetic scale was represented by the sharp upturn of an exponential curve; this led to anticipation and fear of tremendous growth in the next 10 to 20 years. Many commentators saw, sooner or later, that continued growth according to the exponential model would lead to absurd conclusions about the number of books and scientific researchers likely to be in existence, and that the predicted growth would lead to an imbalance in the distribution of wealth. Rose (1967) summarized the thinking then prevalent, and considered the consequences of the predicted alternatives of saturation (S-curve) and levelling off, which sooner or later are bound to occur under the exponential model. The various conditions which can exist, and which ought to be borne in mind when interpreting production data are shown in Figure 1. Interested in scientific spending, Rose saw that levelling off rather than saturation was inevitable, but cautioned against over-ready acceptance or spurious interpretation of the model, because of the adverse political and social implications for middle term planning in the economy, research and education which could result. Furthermore, from the point of view of the policy maker, Rose felt that it was improper to argue that exponential growth must by definition (and at a particular point in time) arrive at a saturation point. Planners and policy makers may be able to plan on assumption of saturation or actually induce saturation deliberately, but there are cases where such an action could be harmful. Since 1967 more writers have found it desirable to consider the implications of saturation and levelling off.

The exponential, S-curve, and levelling off models of growth have wide implications; however in this report it is proposed to do little more than examine them in relation to the scientific and social scientific literature and from the data available make what projections seem most probable and try and envisage their likely effects. The mid-1970s, as a period of reassessment in the role and activity of science, provide a good point both from which to examine fresh data and re-examine existing data, and to relate it to what is known about models of growth. The remainder of this section thus covers in more detail some of the main arguments expressed in the debate.

Interest in the growth of scientific activity as an exponential process has quite a long history going back at least to the early part of the present century. Hulme (1923) contrasted the view of the unlimited growth of knowledge held by J.S. Mill with the more cautious view of limited growth voiced by Lehfeldt (1916). Hulme investigated these arguments by using the technique of what he called 'statistical bibliography'. An analysis of the literature of comparative anatomy by Cole and Eales (1917) provided evidence of non-linear growth, as well as sharp fluctuations in production. A more active interest in the exponential model of the growth of scientific literature has resulted from the work of Price (1951, 1956, 1961 and 1963) which has been followed up by other researchers.

Price (1956) investigated time series of selected data to throw light on the growth of science and changes in its nature. From measuring various manpower, funding and publication (patents, abstracts, scientific papers) time series, Price concluded three things: (i) nearly all curves of growth show the same trends; (ii) the growth is (to a surprising accuracy, ± ca. 1%) exponential, and (iii) the constant of the exponential curve is such as to effect a doubling in annual output at intervals of the order of 10 to 15 years. Price developed these results in his 1961 and 1963 publications, and his conclusions were generally adopted by numerous writers, who from the early 1960s began to make alarming predictions about an 'information explosion'.

To some extent Price's findings were misinterpreted; he argued forcefully in the 1956 paper that continued exponential growth in the various indicators would lead to absurd situations which by extrapolation might be expected to occur in the near future. Price went on to consider the reasonable alternative, that some saturation mechanism would come into force: the exponential curve modifying into an S-shaped curve.

It is suggested here that the conclusions drawn from the data available in the late 1950s and particularly during the 1960s almost certainly require revision. It was correct then to infer that growth was exponential (particularly of journal titles, abstracting services, articles written and abstracts produced), but whilst the idea of an 'information explosion' became convenient and fashionable, the possibilities of other effects were played down. Price's prediction of saturation was largely forgotten. It is nearly twenty years since Price identified and popularized the notion of exponential growth, and we are now in a better position to take a retrospective view and to analyse the trends from the longer time series now available. It should be noted again that nearly all discussion has been of the growth of science, not always including technology, and has nearly always excluded the social sciences and humanities.

The data collected by DISISS on size and growth of social science literature can be seen in the context of these previous theories about the growth of science and it can be examined to see whether the old trends really existed and are continuing or whether new trends are becoming apparent. Futurologists have begun a re-examination of the theories and practices of economies undergoing exponential expansion (for example, Club of Rome, 1973) and have concluded that there exist definite limits to growth, that saturation can occur and that it may occur soon. In the field of scientific literature, it is now a suitable time to re-examine the hypotheses and data available on size and growth, and in particular to see (i) whether exponential trends exist at all or have been maintained over the last 20-30 years, and (ii) whether there are signs of inflection occurring on the growth curve which may be a prelude to saturation. The watchword 'information explosion' may give way to the 'paper shortage' and 'energy crisis', as popular ideas which affect or assist in the shaping of official policies.

The present study has shown that although social science serial production has been growing exponentially since 1880, the trend in the monograph literature, on rather more limited evidence, is not always of accelerating[1] growth, although there is evidence of accelerating and exponential growth in certain subject areas and in certain countries. Meadows (1974) argues that non-linear growth in sub-areas in not incompatible with linear growth in the literature as a whole; however in practice different sets of boundaries can be defined for most subjects; and this will inevitably effect the type of curve produced. The observed linearity in some sets of monograph data may represent a fragment of a non-linear curve of large scale extending over a long time period. Additionally, there are the problems of the variability of annual data and even more crucial ones of definition of subject boundaries. The evidence collected by DISISS points to a need for deeper and more cautious consideration of literature growth; such concerns are evident in reviews (Vickery, 1974; Urquhart, 1974) of the recent information forecasting study by Anderla (1973).

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[1] In describing growth curves the term 'accelerating' has been used to describe a positive non-linear trend or an unconfirmed exponential trend. The description 'exponential' is reserved for those cases in which the plotted distribution is reported to give a good fit to an exponential function.

May (1966) and Gilbert and Woolgar (1974) have reviewed some of the literature, including Price's work on exponential growth curves, and have made important suggestions at a technical level. Price used cumulative data on titles and abstracts, and May points out that the use of this smoothing device may mask important deviations from the theoretical curve. Gilbert and Woolgar regard deviations from the cumulative curve as indicating events which may be of interest to the sociologist of science. May has argued that as relatively small changes in the inclination of the straight line (plotted exponential on semi-log scale) produce significant changes in estimated growth rates and doubling periods, relatively large errors can occur in predictions. May also suggests that growth rates are over-estimated by ignoring the literature in existence prior to any year, and accordingly is critical of Price's work on this account. If all the scientific literature (adequately defined) is considered the long term growth rate may be nearer 2.5% rather than 4% to 5% or more. The definition of a subject area can also create problems; Price was unspecific about what constituted science at present and about what might constitute it in the future he was interested in predicting. In the present study, the scope of the social sciences serial literature on CLOSSS[1] has been defined fairly precisely.

The S-curve probably forms a better growth model than the exponential and both Price, and Ben-David and Collins (1966) affirm that it is capable of application to data from a wide range of phenomena, not all connected, although certainly indirectly related, to information and bibliographical activity. Literature growth may thus be forecast cross-sectionally in terms of other social and economic indices; some data on this topic is discussed in greater detail in section 4.11.

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[1] The Check List of Social Science Serials constructed as part of the research project (see 2.1.1).

1.4 Review of progress of research

Writings on the size, growth and characteristics of the literature appear in three main forms. Firstly, the issues involved may be mentioned as a background to discussions of a more general kind, e.g. on library and information services, and on publishing. These writings are usually confined to mentioning a few research studies, to the identification of the problems, and to speculation on their extent and characteristics. Occasionally, such studies can be very informative when they make good use of the existing secondary statistics, e.g. Barker (1958), Machlup (1962), Escarpit (1966) and Taubert (1972). Other examples of this type can be found in a wide range of information science writing: Dolby and Resnikoff (1971), Downs (1961), Maddox (1969), Shils (1971) and Simon (1973).

The second category of writings are what can be broadly classified as statements of concern, policy reports and trend reports, which deal largely with pressing current issues and their likely future effects. Often, such writings make recommendations for closer study of the size and growth of the literature. The studies by Bryan (1968), Committee on Scientific and Technical Communication (1969) and Anderla (1973) are good examples.

The third category consists of studies based on empirical evidence which form the real kernel of writings on the topic. The study of size, growth and characteristics of the literature is a relatively new research area, in which most studies have been conducted since the beginning of the 1960s. The scope, extent of data collection and depth of analysis vary considerably, and papers with limited data can make a significant impact on thinking - the paper by Price (1956) is an obvious example. The level of empirical research obviously shows considerable variations, especially in the primary data collection undertaken (e.g. of numbers of articles published, number of journals in a field, etc.) and is often supplemented by a discussion and reanalysis of statistics reported in other studies.

Individual studies are listed in Table 1 and are discussed at appropriate points in the rest of this report. The most seminal studies have been those by Bourne (1962), Gottschalk (1963) and Barr (1967) dealing with the serial literature of the sciences and technology, together with detailed studies of subjects, such as Orr and Leeds (1964) in bio-medicine, Stoddart (1967) in geography, Lengyel (1967) in the social sciences, Holt and Schrank (1968) in economics, Anthony, East and Slater (1969) in physics, Clayton (1970) in geography, and Berg (1971) and Fletcher (1972) in economics. The studies of the monograph literature by Hokkanen (1971) and Vebra (1972, 1973) must also be mentioned.

Despite the substantial number of studies carried out there does not yet appear to be clear and general agreement about either gross figures or trends, in any subject area. This is especially true of investigations into literature size (affected by coverage and subject boundary criteria) and growth (affected by the time series data available and the interpretation placed on the different forms of growth curves). As an example, the data gathered in this project on the growth of the monograph literature suggests that linear growth is a more common pattern than exponential or other non-linear growth; such a conclusion seems to run counter to the generally accepted view that all information and documentation activities are subject to exponential growth. Indeed, very little research on the size and growth of monograph literature appears to have been undertaken. An examination of much of the literature on size and growth suggests that the idea of an 'information explosion' has had more impact on the debate than the actual measurement of the nature and reality of the 'explosion'. There is still scope for more detailed empirical research, aimed at building up a bank of knowledge about the basic statistical parameters of the literature, which would be useful in servicing information policy-making and system design. The present report should be regarded as a contribution to such a bank of information, because it contains the results of an empirical survey of the social sciences, as well as an analysis of trends in other disciplines and subjects.

1.5 Method of enquiry

Some of the problems have been dealt with in other DISISS reports (Bath University 1972; Bath University 1974) but are restated here in summary form. A major weakness of studies of size, growth and composition of the literature is the quality of the data, which can be either incomplete, inaccurate, not available or too coarse.

The first stage is to decide which items from the whole potential range of bibliographical materials are to be counted and how they can be classified. The most useful division is between serials and 'non-serials' (monographs, etc.). Within serials there are many categories, and some items (e.g. many government publications, monograph series) can be considered either as serials or 'non-serials'. Various definitions and categorizations of bibliographical forms can be devised, and despite attempts to standardize concepts and terminology (UNESCO, 1964; Anglo-American Cataloguing Rules, 1967) there are many acceptable possibilities. A full picture of size, production and growth must consider titles, articles and copies. Convenience of data collection and availability of data determine the extent of measurement on each type of unit.

Because the process of identification and categorization of materials is often conducted locally, e.g. for the preparation of the UNESCO statistical series, the researcher does not have much control over the data. Attempts can be made to estimate likely errors and to produce 'correction' factors, but these tend to make analysis and interpretation difficult. The need for an understanding of subject differences in documentation is great, but the means of investigating them are very poor. There is often no alternative but to work within the pre-existing library classifications (UDC and Dewey) by which most bibliographical statistics are classified. Comparison of different data sets cannot always be made with confidence and efforts to make different sets of data 'comparable' or 'compatible' (Bath University, 1974) can never be completely satisfactory.

Then there is the question of the depth of analysis possible with the data available. This is typified by the difficulties encountered in trying to measure the current size of the social science serial literature and its geographical and subject composition. The most that can be hoped for is to arrive at estimates of approximately the right order of magnitude and ranking.

Although total world wide coverage of the various types of literature is not possible, this is not essential for an understanding of the size, growth and composition of the literature. For instance, 12 countries appear to produce about 65% of the total world output of monograph titles (i.e. books, excluding reports) and some 45 countries produce 80%; these levels of geographical coverage are adequate to obtain an impression of major trends.

The various sources of statistics and their scope are considered in each of the main sections. Serial literature and monograph literature (excluding the report literature) are given the most attention but reports, government publications (a functional category), estimates of numbers of articles, pages, words and abstracts, and the size of various types of machine and manual data bases are also considered.

1.6 Subject scope of analyses and subject requirements

It is necessary to consider the subject scope of the social sciences. For the coverage of the Check List of Social Science Serials (CLOSSS) a broad subject range was used; this was based on working definitions formulated by a group of experts convened by OECD (Appendix A). Although history and law were not included in the source journals chosen for citation studies (see DISISS Report B5) much of history and law is relevant to the social sciences and these subjects are included in estimates of size and growth of the literature. Urban, regional and environmental planning could hardly be excluded from a study of the social sciences; the research carried out by the Organization of Information for Planning project (OIP) has confirmed this (White, 1974). Geography in its social, economic and planning aspects was the subject area of one of the DISISS information service experiments. The bibliographical relationships of geography to the social sciences have been discussed by Aiyepeku, who reached no satisfactory conclusion except to point out quite rightly that many geographers view their subject as neither a physical nor a social science but as spatial science (Aiyepeku, 1971). The analysis of subject relationships at the philosophical and methodological level is important in theory to the bibliographer or system designer, but for many practical reasons and purposes it is wiser to avoid the philosophical debates and look for patterns that emerge empirically.

The DISISS research has tried to avoid being too specific in delimiting and interpreting subject boundaries in general, or the boundaries of the social sciences, largely because cross-disciplinarity is an important characteristic of many social sciences (and one which can be measured in citation studies). Yet it is inevitable that specific subjects must be named frequently; in this case, conventional labels are used for convenience without implication of empirical validity. The problems of establishing subject boundaries empirically are dealt with in more detail in DISISS Reports A1, A3 and B6.

DISISS is not confined to the traditional core of the social sciences - economics, political science, sociology and anthropology - which are represented by the International Bibliography of the Social Sciences. The continental-European viewpoint, in contrast to the Anglo-American, sometimes sees the social sciences as these four central disciplines, psychology being linked with the pure (and sometimes applied) sciences, linguistics with the humanities and philosophy, and geography either within the physical sciences or even within the historical sciences, or on its own. The bias of this current study could be labelled Anglo-American; psychology, linguistics and economic and social geography are considered to fall more within the social sciences rather than any other broad area. The four traditional core subjects contain areas which are often considered separate subjects in their own right; for example social welfare within sociology, public administration within political science, criminology combining sociology and psychology, and education which is highly interdisciplinary. The analyses reflect the need for a more detailed subject breakdown.

2.0 SERIAL LITERATURE (TITLES)

2.1 Sources and method

The identification and definition of serial publications have been discussed in detail elsewhere (Bath University 1971a; Bath University 1973; and DISISS Report B4). The main source of data on serial publications has been the CLOSSS file, containing some 6,200 records representing up to 4,000 current titles[1]. The analyses based on CLOSSS have been supplemented by analyses of production statistics from the UNESCO Statistical Yearbook, analysis of the World List of Social Science Periodicals (WLOSSP), analysis of bibliographies (Ulrich's periodicals directory, Woodworth's Guide to current British journals) and secondary publications, and reference to various studies carried out in the past (reviewed in section 1.4 and elsewhere).

2.1.1 CLOSSS (Check List of Social Science Serials)

CLOSSS is a machine readable data base of information on social science serial titles, constructed for DISISS bibliometric studies; it is described in Working Papers no. 2 (Bath University, 1971a) and no. 8 (Bath University, 1973) and in DISISS Report B4. At the time the project began no suitable data base of social science serials existed on which to carry out studies of size, growth, and composition of the literature. In the development of CLOSSS it has been possible to exercise complete control on inclusion or exclusion of material. In practice, the depth of coverage of one particular type of serial, subject or country will inevitably have been affected by the limits placed by project resources on data collection. In the main the object and result have been to secure a broad yet representative collection of titles both within and related closely to the social sciences.

2.1.2 Published statistics

The only regular and consistent series of secondary statistics (as distinct from primary data) relating to the serial literature is the UNESCO Statistical Yearbook. This provides a very limited time series, which is inadequate for a study of growth, and unsuitable for the present work because it is not classified by subject (with the exception of Table 9.3 which is available from 1972 only). Three categories of periodical (serial) are identified: (i) general interest daily newspapers, (ii) non-daily newspapers of general interest, and (iii) periodicals not considered to be of 'general interest'. The definition of 'periodical' adopted[1] is largely synonymous with that used in the preparation of CLOSSS for a serial publication (including monograph series but excluding newspapers). Material in UNESCO category (i) is of no interest to the present study; certain items in category (ii) are regarded as relevant for the purpose of CLOSSS (e.g. New Statesman, Spectator, Time (US), Economist); and category (iii) by UNESCO's definition[2] coincides with the type of material included in CLOSSS. The UNESCO definition excludes periodicals published for advertising, those of a transitory character (undefined) and those in which the text is not the most important part[3]. On the other hand, UNESCO recommends 'inter alia' the inclusion of government periodicals, periodicals of professional, trade union, political and sports organizations, publications occurring annually or less frequently, parish and school magazines and house organs, as well as the more conventionally recognizable types of social science serial associated with academic or scientific activity. Parish and school magazines and house organs are not generally included in CLOSSS, although some material from the other categories is included.

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[1] By the end of 1974 the file contained 6,232 records, consisting of 3,909 current titles, 728 'previous' titles and 1,595 discontinued titles (see DISISS Report B4, section 9.0).

2.1.3 Other primary and secondary data

The third edition and data for the proposed but subsequently abandoned fourth edition of the World List of Social Science Periodicals were useful sources of data for estimating the geographical distribution of serial titles. Ulrich and Guide to current British journals provide estimates of subject distribution and numbers of titles available. Trade directories such as the Standard periodical directory and Willings' press guides (British and European) are supplementary sources. Specialized subject bibliographies of serials have also been used.

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[1] "A publication is considered to be a periodical if it constitutes one issue in a continuous series under the same title, published at regular or irregular intervals, over an indefinite period, individual issues in the series being numbered consecutively or each issue being dated" (UNESCO, 1964). In this report the terms serial and/or title (=serial title) are used generally and interchangeably when discussing all serials as publications, including periodicals, journals, monograph series, etc., without differentiation. It is usually clear from the context when the word title refers specifically to the bibliographical title (or name) of a publication, which can change over a period of time. When a more specific category of serial is meant this is referred to precisely, e.g. monograph series, government serial, periodical, journal (see 2.5.1(b)), etc.

[2] "Other periodicals are those which are either concerned with subjects of very general interest or else mainly publish studies and factual information on such specialized subjects as legislation, finance, trade, fashion, medicine, sports etc. This category covers all specialized journals, reviews, magazines and all other periodicals apart from general interest newspapers" (UNESCO, 1964).

[3] These types of serial have not been specifically excluded from CLOSSS, although they do not form a great part of the file.

2.1.4 Size of serials (articles and pages)

An estimate of the numbers of articles produced and their distribution and concentration between journals is also of great importance. Data on the number of articles published in social science journals was collected for the CLOSSS file, and has been supplemented by data on size of journals (in pages and articles) gathered during studies on correction factors for citation decay curves. From time to time studies on the number of articles published in a serial, subject or period of time have appeared in the literature and are mentioned where appropriate.

The number of articles appearing in different journals varies considerably as shown by the data collected by DISISS and in a recent survey by Wood and Ferguson (1974). It was possible to collect a little data, which is reported in section 4.1(4), but this is not sufficient to draw any conclusions about differences between subjects or countries, and only justifies tentative conclusions about differences over time.

2.1.5 Definitions and comparability of studies

The issues discussed in this section relate not only to the serial literature, but to the study of any literature; it is convenient to deal with them in one section.

It would be convenient if similar definitions were adopted by all bibliographies and collections of statistics, but since they are not, definitions have to be used which are clearly stated, reasonably accepted, practicable in terms of the data available, and applied as consistently as possible. The main problem in the present study arises because the sources of statistics used are not always consistent, whether over time, between countries or between subjects. Where distortion is known or believed to have occurred, it is mentioned in the appropriate section of this report, and where possible allowed for.

One idea introduced in sections 2.2.6, 2.2.7 and 4.2 is both problematic and contentious - this is the rather useful, but difficult to define, distinction between 'core' and 'related', 'peripheral' or 'non-core' literature. These concepts can be operationally defined by performing citation analyses and using a statistical model similar to the Bradford distribution (see DISISS Report A3, section 4.1). Our use of the terms here has inevitably been much looser, but to come to reasonable conclusions on the extent and size of such literatures, within subjects and between them, statistical analyses of citations and references would be necessary. The definition of 'core' literature is more properly discussed in DISISS Report A3 dealing with citation analyses.

There is a good deal of literature discussing and reporting size and growth data, at the global, national and subject level, and this has been drawn upon freely. The exact population and sample used are named wherever possible, particularly when comparing what are reputedly the same subjects or form of literature. Interpreting the degree of comparability between studies, even where there is some compatibility in definition of variables and concepts, is necessarily a subjective process. The confusion which can result when these fundamental issues are not clarified is abundant in the literature on 'information explosions' and prediction of future trends - witness the study by Anderla (1973) and the criticisms of it by Vickery, and Urquhart (1974). There can be no guarantee either that sets of statistics are consistent over time, especially the UNESCO figures which are reported by individual countries, and over which little real control has been exercised. The studies by Vebra (1972, 1973) of US and USSR book and reading material production, and the comments on them by Paton (1973), illustrate very well the problems involved.

2.2 Current production and size of serial literature

2.2.1 Estimate of the current total production of serials in all subjects

The estimated total number of current serial titles in all subjects is given in Table 2. Use of the published UNESCO data and our own supplementary estimates gives a world total of about 123,000 serials (other than newspapers (category (i) and (ii) [see section 2.1.2]), monograph series, and some trivial or ephemeral titles) in all subjects for the beginning of the 1970s.

2.2.2 Estimates of the current total production of social science serials

Table 3 is an attempt to summarize various estimates of the number of currently published social science serials. The estimates can be considered in three groups, each with some claim to validity.

The UNESCO and *Ulrich* data forms the first group. The *Ulrich* estimate is based on a wide definition of social sciences and draws material from many subjects in that bibliography. It includes some history, law and librarianship plus a large group of general social science serials. The types of serials covered include research journals, news journals, house organs, and some government serials. The UNESCO data, although giving a larger total, is in fact based on a narrower definition of 'social science', which excludes law, some of the general subject journals (UNESCO classification 'generalities'), social welfare, criminology and public administration (classed as a part of law). The UNESCO titles are probably drawn from a more restricted bibliographical range than *Ulrich* (excluding e.g. many trivial and ephemeral serial publications). Apart from providing an order of magnitude estimate the result at this level is not useful for practical purposes. A summary statement would be that there were between 20,000 and 27,000 social science related titles current at the beginning of the 1970s, when there were some 123,000 serial publications of every type (regular and ephemeral) currently published.

A second estimate of the current world social science serial literature is the number of titles collected by the British Library Lending Division. Between 8,000 and 10,000 titles relevant to the social sciences were acquired from Dr. K.P. Barr, British Library Lending Division); of these some, but not a significant number, have ceased publication since.

The third group of estimates consists of those derived from CLOSSS (c.4,000 titles) and the latest edition of WLOSSP (2,662 titles). Both estimates could claim to be derived from a critical evaluation of the literature. WLOSSP defines the social sciences more narrowly than CLOSSS, and could be regarded as a listing of the current 'core' of titles drawn from the central disciplines of the social sciences (sociology, general psychology, social anthropology, criminology, economics, demography, political science, social geography, social and economic history and some aspects of law). It is quite likely that WLOSSP, in adhering to a fairly strict conception of subject and type of serial, under-estimates even the main body of serial literature used by academic and research social scientists. CLOSSS embodies a wider view of the relevant related literature and the main body of titles and includes serials in which 40% or more of content was judged to be relevant to social sciences by the data collectors; this was a deliberate policy so as to create a representative sample of all the types of serial literature (described in detail, DISISS Report B4). The titles gathered on CLOSSS also include all titles classified as social science which were cited in the DISISS citation study.

The estimates produced for c.1970 by WLOSSP and CLOSSS must come very near to the total of social science primary journals (defined as those journals used by academic and research social scientists excluding those working in highly specialized or unusual fields). Allowing for gaps in coverage and some latitude of subject interpretation there were about 4,000 basic social science primary journals current in the early 1970s. This total should be looked at in relation to the potential 'information base' of primary journals covering information relevant to the social sciences, varying between 10,000 and 27,000 current titles.

2.2.3 Number and distribution of current serial titles in social science subjects

The number, and distribution across subjects, of current serial titles on CLOSSS is shown in Table 4; the subject categories are those identified as relevant to the social sciences for the CLOSSS data collection. Titles on CLOSSS were classified with a maximum of three subject codes. 2,760 were coded once only; percentages based on these are given here. Economics accounts for at least 26% of the titles, followed by education (10.4%), political science (8.4%), general social science and multi-disciplinary serials (8.6%), and psychology (6.4%). Anthropology, social and economic geography, law, sociology, social work, and criminology are among the subjects represented by less than 5% of the titles recorded. For comparison, political science, economics and commerce, and education are the subjects best represented in the social science monograph literature of the top 12 book producers (Working Paper 7, Tables 65, 81 and Figure 10; this report Figure 26). However, the comparison is not altogether a fair one, since the codings given to serials by the DISISS researchers may differ substantially (and in unidentifiable ways) from those given in the primary sources on which the monograph analyses are based. The distribution of multiple subject codes on CLOSSS is not dissimilar to that of the single codes. The number of titles to which any single subject code is given is also listed in Table 4, by summing occurrences of codes in combination with those occurring once only; the general impression is of a similar proportional distribution of titles across subjects.

Data on the distribution of titles across the same subjects in Ulrich is given for comparison in Table 4. The Ulrich subject headings were combined to approximate to those used for CLOSSS data collection. To make the CLOSSS data slightly more comparable, some of the more minor subjects were omitted and the CLOSSS percentage distribution recalculated. The Ulrich sample is very much larger than CLOSSS, but it is very interesting that the percentage distribution of titles across subjects should show only relatively minor differences from CLOSSS. The greatest differences occur in general serials, political science, linguistics and psychology. The reasons for these differences are not readily apparent. In the case of psychology the difference in the number of titles is not great (325 in Ulrich and 252 in CLOSSS) but their percentage share of all serials differs appreciably; for the relatively greater share of political science titles in Ulrich, the explanation cannot be solely in the difference in the total number of titles (nearly 3,200 more in Ulrich), but is probably related to the criteria of coverage of the two files. The very close similarity in the proportions of economics titles is remarkable. Economics, political science, education and general serial titles form the main subject groups in Ulrich, as they do in CLOSSS.

The data on category (iii) publications (see section 2.1.2) given in the UNESCO Statistical Yearbook can be used for another estimate of the distribution of titles across the social sciences more rigorously defined than for CLOSSS or Ulrich. The results of this analysis are given in Table 5. Although it was possible to estimate a world total of social science titles from UNESCO (Table 3), the subject breakdown is at present restricted (Table 9.3) to fewer countries and excludes some of the major producers (USA, UK, Canada, Federal Republic of Germany and India) of titles, as well as some less important producers. Economics and political science are classed together, so one cannot estimate whether economics alone represents about one quarter of all titles, as it appears to do in CLOSSS and Ulrich; however, if class 5 is divided equally between politics and economics and the latter is added to commerce, this would result in economics and related titles accounting for nearly one quarter of the total (23.2%). In this analysis also, economics, politics and education form the main fields.

The subject distribution at the world level does not of course necessarily apply to any particular country. Some data for the UK, given in Table 5, shows quite significant differences from the world picture. Economics and politics are less prominent, management and history more so; there is also a greater number of titles in commerce. Although little reliance should be placed on such findings as these, major differences between countries would in fact be expected. However, for the designer of information services for UK users, subject distribution by language is more relevant than distribution by country (see section 2.5.1(g)).

2.2.4 Total size of serial literature in all subjects

An estimate of the total size of serial literature, in terms of the number of serials ever published, whether current or dead, is both of intrinsic and practical interest. One way of estimating the total size of serial literature is to count the numbers of different entries made in a major union catalogue. The 1965 edition of the Union List of Serials, contained 156,449 entries; by 1966 the number of entries had grown to approximately 210,000 on the basis of records noted in New Serial Titles (the publication which supplements the Union List of Serials). Since Bryan reported these figures in 1968 (Bryan 1968) the total will have grown further - additional titles recorded in New Serial Titles since 1967 may bring the grand total to well over half a million in 1974[1]. Note, at this stage, that the difference between annual totals may not represent the growth rate of new titles alone, but will include records of title changes and entries of library holdings previously excluded from earlier editions. The Union List of Serials and New Serial Titles are the largest serials union catalogue in existence, and for a crude estimate the additional titles contained in BUCOP, the number of which is unknown, can probably be ignored; but the total derived from the Union List of Serials should be considered as a lower estimate. That the figures quoted here are low estimates is confirmed by the stated editorial policy of the Union List: categories of serial excluded are government publications, newspapers, law reports and digests, house organs and the publications of local and state religious, labour and fraternal organizations. Also, gaps are bound to exist in international coverage, particularly of Soviet and Asian material.

Rigorous application of an inclusive definition of 'serials' obviously produces an enormous figure of titles ever published - a rough estimate would be in the order of half a million titles[2]. The quantity of literature of interest to information services and users is much less. Some 80% of citations are concentrated on about 15% of cited titles, the majority of which are current. It should be remembered that the 'population' used in such studies usually consists only of titles cited at least once, and does not include titles not cited at all - which probably constitute a majority of all titles. Uncited titles are presumably nevertheless used, and actual use must be far less concentrated than are citations. However, the proportion of titles that need to be covered in indexing and abstracting services is probably relatively small. It should be noted that even among the social science serials taken at the British Library Lending Division, there is considerable concentration of articles among serials (Vickery, 1968; Wood and Ferguson, 1974); since in general the lower the 'status' of a serial, the smaller its size, the uncited titles probably account for a proportionately very small number of articles.

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[1] Grosch (1973) records some 450,000 titles in the Union List of Serials 3rd edition (1965); New Serial Titles records some 350,000 titles in addition to the Union List total mentioned above. On this basis Grosch estimates that about 775,000 serial titles are available in the USA out of a world total of nearly 2 millions. It is not clear whether Grosch's figures refer to actual publications or to all bibliographical title entries, including added entries, etc. These discrepancies in counts of the Union List need to be reconciled. Despite these large estimates, the total calculated for scholarly serials (section 2.2.1 and 2.2.2) still hold good.

[2] Osborn (1973), on the basis of the Union List of Serials and Library of Congress analyses, estimates that the total of serials (including newspapers) ever published is between 0.8 and 1.0 million.

It is worth considering briefly the general implications of the total size of the literature ever published. Bibliographical policies of any kind can be based operationally on the concepts of 'core' and 'peripheral' literatures, current and retrospective files and the identification of thresholds and boundaries related to user requirements, management techniques and available resources. The greater the total size of literature, the greater the need to divide it into manageable areas, and possibly, the greater the degree of concentration of use, though this hypothesis has yet to be adequately tested.

Libraries with large retrospective holdings of current and dead serial titles are relatively few, and the holdings of archival and highly specialized material are located in specialized and often unique centres. These patterns too are traceable to the ultimate factors of total literature size, concentration and scatter. Growth has led to specialization at various levels; the relatively small number of frequently required items is made generally and immediately available, while the larger number of infrequently required materials is less generally accessible. Compensatory devices such as central loan and reference collections, union catalogues and bibliographical guides try to ensure that infrequently demanded items are available to those users requiring them.

2.2.5 Total size of social science serial literature

No attempt has been made to calculate the total size of the social science serial literature both current and dead. Such an estimate would have practical importance only if the total could be broken down into subject fields. More useful are estimates of the number of currently published serials - these estimates are dealt with in other parts of this report (section 2.5.1).

Estimates of the number of current social science serials produced in various countries have been calculated on the basis that 30% of all current serials are of relevance to the social sciences[1]. Using the estimates of the total number of serials in section 2.2.4, the total number of social science titles ever produced could be between 70,000 and 170,000 titles. The proportion of 30% may need to be reduced because the social sciences are of more recent origin and have grown at a different rate from subjects in science, technology and the humanities.

2.2.6 The 'core' literature of the social sciences

It has become commonplace to view the literature of any subject as having a 'core' and a 'peripheral' zone. Attempts have been made to define this concept in mathematical terms, particularly by Brookes, Vickery and Leimkuhler, developing ideas propounded earlier by Bradford (see DISISS Reports A1 and A3). The serials comprising the 'core' literature are normally those which are most in demand and tend to be those regarded as the most important and prestigious channels of publication. One way to identify 'core' journals is by conducting citation studies[2] in the main subjects of the social sciences; the practical and methodological problems of such an undertaking are large, and have been dealt with elsewhere (Bath University, 1972b; DISISS Reports A3 and B5). Citation studies, however, are not likely to identify all the most demanded or even used journals;

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[1] See section 2.5.1(f). Where the exact proportion is unknown estimates of the numbers of current social science serials produced in various countries have been calculated on the notional basis that 30% of all current serials are of relevance to the social sciences. The value of 30% is an average reached by analysing the subject classified data on serials in the UNESCO Statistical Yearbook (Table 9.3).

[2] However, the high concentration on a few serials found in some citation studies is at least partly attributable to the fact that they tend to be large serials with many articles. When the cited serials are ranked by 'impact factor', the concentration is less (see Science Citation Index Journal Citation Reports).

some infrequently cited journals, e.g. news journals, professional journals and popular journals, may receive heavy demand and use, and may be considered to be just as important as the 'core' journals by many users. Indeed the concept of 'core' relates not only to the extent of use, but also to archival value. 'Core' serials may be defined as those serials containing the most significant contributions to knowledge, as indicated by citations, usage and subjective assessment of value. There is likely to be overlap between the 'core' journals of different subjects, and the 'core' is in any case a relative concept - the number of titles can be varied merely by altering the citation cut-off. Garfield has suggested that the 'core' literature of science as a whole amounts to little more than 1,000 primary journals (Garfield, 1972).

Compared with the total number of serials currently published or ever published, the number of 'core' serials is small. We are not yet in a position to calculate with accuracy the size of 'core' literatures (according to different cut-off points) in social science subjects, but offer some tentative estimates, based on the results of informed speculation and DISISS research, in DISISS report A3.

It should be noted that the foregoing paragraphs have dealt with the number of serial titles, not with the 'size of the serial literature'. The size of the literature (as noted earlier in section 1.2) can be defined in terms of titles (as above), articles, space occupied, pages or even words. The most useful measure for library storage purposes is physical units of space occupied; for general purposes of studying growth and making comparisons between subjects, articles are probably the most valid parameters. It is especially important to remember these distinctions when considering 'core' literatures, since the 'core' serials tend to contain large numbers of articles, and the articles they contain may represent a much larger proportion of all relevant articles than the titles represent of all relevant titles. However, within 'core' serials many articles are relatively unused, while there are some important articles in peripheral publications. The concentration of citations or uses on articles, and their distribution across serials, are questions that have so far not received serious study, although if it is really necessary to identify 'cores', the most valid way of doing so would perhaps be to carry out an article citation or use study and then to identify the serials which had the best representation of heavily used articles.

2.2.7 Literature related to the social sciences

In using certain techniques, such as citation or use analysis, to define the 'core' literature of a subject one can estimate the size of the peripheral or related literature. A range of acceptable operational definitions of the related literature could be produced. At its broadest, any journal containing information of relevance to researchers in a subject could be held to be part of the related literature. Researchers in any subject occasionally, and for various reasons, publish articles in the 'non-core' journals of their field (or even in journals apparently unrelated to their field). Bibliographers compiling comprehensive lists of serials in a subject generally use as inclusion criteria such factors as institutional provenance, editorial board composition, percentage of relevant papers, coverage by subject indexing and abstracting services, etc. The size of a peripheral literature may be as well determined subjectively by its bibliographers as by objective measures derived from citation analyses. There may be significant differences between the various totals of serials in a given subject reported in section 2.5, which depend on the application of one subject code only to a title, and the size of the serial literature determined by a combination of rather more broad ranging and complex criteria like those suggested above. Brookes (1968) has argued that the application of a Bradford-Zipf distribution is one method of estimating the size of a related literature; it relies on the acceptance of the idea of 'completeness' of search.

2.2.8 Serial literature of other subjects

A summary of some of the more important studies and sources of information on the serial literature of other subjects is given in Table 6 . The studies reported are concerned almost entirely with science, technology and medicine; the humanities have received very little attention, with a few exceptions, such as music (Bottle and Chase, 1973), history (Boehm and Adolphus,1961) and theology (Cornish, 1972; Brockway, 1973; Regazzi, 1973). A rough estimate of the numbers of current serials in various humanities subjects can be gained from Ulrich's Periodicals Directory (15th edition), under the subject headings of art (670 titles), classical studies (76 titles), humanities (230 titles), linguistics (591 titles), literary and political reviews (1,146 titles), music (692 titles), philosphy (438 titles), religion and theology (2,555 titles) and theatre (268 titles).

In the present state of knowledge it is difficult to evaluate the estimates given in the studies. Studies based on the number of journals covered by a major science indexing and abstracting service generally give a fair assessment of the main core and related journals in a subject, but broad headings like physics, chemistry, biology, and medicine, conceal differences between their component subjects which are of importance in their own right, e.g. zoology, physiology, biochemistry, etc. The problem with this method of calculation is that it depends on the adequacy of coverage, and services differ greatly in their coverage. Secondary services have often deliberately extended their range of coverage - to the innocent user such expansion could easily be taken for genuine literature growth. Further studies of the number of titles covered by abstracting services are necessary, distinguishing the number of titles scanned from the number which yield relevant abstracts and index entries, and taking account of different coverage. A further difficulty is the scatter among indexing services of journals in many minor and interdisciplinary subjects, which makes quantification difficult; however, secondary services have been established to cover such specialized areas as zinc (Zinc Abstracts), language teaching (Language Teaching Abstracts), and those represented by services like Medical Electronics and Communication Abstracts, Hospital Abstracts and Sugar Industry Abstracts, which could be used to estimate size and growth. Estimates of size and growth based on conventional subject divisions are clearly of little use, when such a variety of specialized areas is already well established. The real difficulty is not in the counting and identification of the serials (which can be done with the aid of standard bibliographical tools), but with the delimitation and definition of subject areas, either by citation analysis or the study of coverage patterns of secondary services. Moreover, knowledge can be analysed in various ways - by traditional academic boundaries, by mission, and so on.

Some studies of size and growth of science and technology serials are mentioned in Tables 1 and 6. The estimate of 35,300 current scientific and technical serials at 1961 reported by Gottschalk and Desmond is widely accepted. Price estimated some 30,000 titles current in 1963, and pointed out that the total of 100,000 titles for c. 1960 recorded on his growth curve (Price, 1963, p.9) included dead titles as well. Barr (1967) provided an estimate of 26,000 titles for 1965 based on the number of titles currently received at the British Library Lending Division. Both Gottschalk and Desmond, and Barr point out that the World List of Scientific Periodicals listing c. 60,000 titles (4th edition) contain very many 'dead' titles and ones of doubtful relevance to current science; he suggests that the World List contains about 24,000 current titles.

2.3 Growth of serial literature

2.3.1 Method of analysis and measurement

The growth rates of serial titles in the social sciences have been estimated from CLOSSS. The accuracy of the estimates depend, therefore, on the extent to which CLOSSS forms a representative sample of the total literature. A suspected under-recording of serials prior to 1950, for instance, could have an effect on the overall trend of the growth curve. However, it is the only readily available source for a time series. Analysis of growth was made possible by inclusion of starting and ending dates in the records, so that the number of serials 'alive' at different dates and birth and death rates could be calculated.

Estimates of growth of serial titles in other subjects have been obtained from results reported in the literature. For comparative purposes this is not always satisfactory because current interpretation relies on having experimental details of data collection, file composition and sampling, which may not be fully reported. A discussion of the relationship between growth rates of serials and monographs is deferred until section 2.7.1.

In describing growth curves the term 'accelerating' has been used to describe a positive non-linear trend or an unconfirmed 'exponential' trend. The description 'exponential' is reserved for those cases in which the plotted distribution shows or is reported to give a good fit to an exponential function. In certain published studies which report 'exponential' growth there is a lack of reported experimental detail to confirm the trend.

2.3.2 Social sciences

The trend on a semi-logarithmic scale for world social science titles (plot (1) in Figure 2) is a straight line with minimal variability, indicating that growth has been consistently exponential. Because the fit is so close to a straight line the growth rate in annual production of serials was calculated using 1950 and 1970 data only. A similar procedure was adopted for the UK, USA, France and Germany (Federal Republic). The UK figure will be typical of growth over the last 100 years or more; whilst those for the other three countries are only typical for the last 20 years, indicating exponential growth since the war. The growth rates calculated are given in Table 7.

It is helpful to place this data in its historical context. The terms sociology and social science both originated in France and were in use by the 1840s (MacRae, 1967), although the area of discourse had already been familiar since the 1760s, particularly in Scotland. In the UK, at 1900 the promise of developments in earlier years had not been sustained; only economics had become properly institutionalized. Specialized social science journals in the UK date, in the main, from no earlier than the 1900s. The growth of specialized social scientific journals reflected the pace of institutionalization; in the USA the rise of graduate schools provided an important stimulus (Bell, 1967). Bell points out that growth of social science journals has not always coincided with the pace of the economy. Thus in the 1920s, the heyday of American prosperity and capitalism few new social science periodicals were established, but in the depression years of the 1930s a significant number of influential periodicals were founded. Since the 1950s the founding of new periodicals has largely paralleled the expansion of the educational and economic system. By the late 1960s Menard (1971) and others had identified a levelling off in the amount of funds devoted to research and education in science fields, but this was having no apparent effect on the output of new titles in the short term; the real effects may only be known by the middle of the decade or even later, and it is impossible to say how far current signs of a fall-off in publication are a reflection of the factors mentioned by Menard, or how far to economic circumstances beyond those mentioned by Menard.

The growth curves for the different forms of serial are shown in Figure 3. Since 1950 statistical serials, monograph series and secondary serials (indexing and abstracting services) have been growing more rapidly than all other forms, for most of the time. According to the CLOSSS data secondary serials (Figure 3 curve (3)) have grown more rapidly than all serials (curve (1)) and than primary serials (curve (2)) between 1950 and 1970; however, using data on secondary services from the sub-file (see section 2.6) plotted against serials on CLOSSS (Figure 14) shows that growth of the former was more rapid between 1950 and 1960 only, but slightly less rapid between 1960 and 1970 (section 2.7.1).

2.3.3 Growth of subject areas within the social sciences

Growth curves for the populations of serials in selected social science subjects are shown in plots (2) to (18) in Figure 2, based on data recorded on the CLOSSS file (see Tables 8 and 9 for raw data on all current serials, 1820-1970, and in selected subjects 1880-1970). Looking at the period 1950 to 1970 economics serials (curve (5)) form the largest, but not the fastest growing group. Political science serials (curve (12)) were growing at about the same rate as economics. Education, linguistics and planning serials (curves (6), (10) and (7) respectively) have shown phases of very much more rapid growth than the other subjects since 1950. Considering only the five main social science subjects (economics, education, political science, psychology and sociology) there is a non-linear trend, which appears to have become relatively well defined at a fairly early date, although it would be desirable to have more data (if it exists and assuming that CLOSSS data may be incomplete) on which to base conclusions about growth, say, before 1930. In the latest period (1960-1970) two groups appear to have developed: a faster growing one comprising economics and education, and a slower one comprising political science, psychology and sociology. Lovell (1973) calculated growth rates for economics journals covered by the Index of Economics Journals; for journals given complete coverage by the Index the growth rate was 3.48% for 1950-1969, with a 19.9 years doubling period; when the list was enlarged to include journals given partial coverage the growth rate was 3.77% for 1850-1969, with an 18.8 years doubling period. A growth curve based on articles indexed from 1886-1965 had a 5.05% growth rate and a 13.7 year doubling period. (This difference between growth rates of articles and titles, is itself of interest as an illustration of the effect of using different measures of size and growth.) Data on doubling periods is discussed also in section 2.3.5.

A comparison of these results for serials with the growth rates of monograph literature (Working Paper no. 7, Figure 10; this report Figure 25) shows that economics monographs (unavoidably combined with politics for analysis purposes) grew most rapidly, whilst of the other four subjects education monographs tended to grow most rapidly, although with an irregular growth trend.

An impression of the relative growth rates in social science subjects is given by data in Table 9 from CLOSSS and Table 10 from Ulrich, in which the percentage of titles in existence at a given date is calculated; taking each row, except the first and last, for comparison a lower percentage value indicates the extent of deferred or more rapid growth at a later period, and a higher percentage indicates that more rapid growth has occurred previously. For example by 1955 68% of geography titles on CLOSSS currently published in 1970 had appeared (Table 9); by comparison considerably fewer linguistics and education titles had appeared, but compared to geography both grew more rapidly in terms of percentage of titles appearing between 1955 and 1970. The Ulrich data uses a different set of subjects and a longer time series. Given that the coverage of Ulrich is representative of the serial literature, the data gives a rough chronological picture of the growth of the social sciences. The Ulrich data indicates that approximately one third of the social science titles currently published at 1970 had originated in the last 10 years surveyed (1960-1969); this is practically identical to the distribution for CLOSSS in a similar period. The main bias in presenting data from both CLOSSS and Ulrich in this way is that it covers only continuing titles, i.e. those current in 1969; the inclusion of dead titles would probably lengthen each subject time series sufficiently enough to effect the percentage distributions.

Another way to test the similarity of CLOSSS growth data with other files is shown in Table 11 for psychology; the percentage deviation of values for CLOSSS and the Tompkins and Shirley bibliography (Tompkins and Shirley, 1969) is no more than 5% at any date, and much less at most dates.

2.3.4 Growth of social science serial titles in selected countries

There is very little data available on the growth of serial literature in different countries, in contrast to the abundant data on current production reported and discussed in section 2.5.1(f). It is possible to produce short time series by country from the UNESCO Statistical Yearbook (1972 edition only), but these refer only to total production (that is, newspapers, non-daily newspapers and other periodicals) without any subject breakdown. The data on CLOSSS is not very suitable for this purpose as there is too little of it, except for the USA and UK. An alternative way using linguistic groupings, e.g. French, Germanic, Slavonic, cannot be used on the present data base for the same reason. Additional data need to be added to the file if CLOSSS is to be used to investigate geographical and language differences more thoroughly.

A series of 7 graphs is presented using data from CLOSSS showing growth curves for serial titles production in different countries (Figures 4 to 10). The curve for the UK (2) gives a reasonable fit to a straight line. For the USA the post-1940 curve (3) also gives a fairly good fit to a straight line. Curves for France (4) and Federal Germany (5) also suggest exponential growth for the last 20 years, but more data would be required to confirm the trend over this or a longer period. The other curves (6) to (13) cannot be regarded as reliable estimates.

By aggregating some of the data a more useful impression can be gained (Figure 10). Social science serial production in Western Europe broadly defined (excluding the UK) is shown by curve (14) (see Table 20 for list of relevant countries); this curve is made up of three separate elements, (i) 6 pre-1973 EEC countries (France, Federal Germany, Belgium, Luxembourg, Netherlands, Italy) curve (25), (ii) Scandinavia (Denmark, Sweden, Norway, Finland) curve (26), and (iii) the rest of Western Europe curve (27). A noticeable rise in production in the EEC group occurs after 1945, since when the rates of growth appear to have been very similar. The levelling off in the early 1970s shown by these and other growth curves discussed in this section, reflects the pattern of data collection for CLOSSS. There is insufficient evidence so far to indicate any real levelling off in production of serial titles.

The successive editions of the World List of Social Science Periodicals (WLOSSP) do not form a reliable time series on which to calculate the growth trend of the social science literature. However, the general impression gained is that the list has grown as serial titles have increased in number (Table 12). The doubling in the number of titles covered in about 11 years (1963-1974) should be compared with a rate of doubling also of about 10 years for serials on CLOSSS (1960 to 1969). A policy of strictly applied coverage criteria in the early years followed by one of broadening coverage in later years will have had some effect on the totals, but the general increase will reflect a real increase in the number of titles available. The relative increases between different groups between 1951 and 1974 gives an impression of growth sectors in the social science literature - South Asian and Japanese serials have had a five-fold increase in coverage; USSR serials a ten-fold increase; Spanish a four-fold increase; whilst US, UK, German language and French serials have had a three to four-fold increase.

The distribution of serials in the top 12 monograph producing countries between 1880 and 1970 is shown in Table 28.

2.3.5 Growth of serial titles in other subjects

Projection of data on growth rates (section 2.3.6) suggests that in the long run the difference between the broad subject areas of the social sciences and the pure sciences and technology may not be great, the growth rate being in each case about 3% to 4% a year. The variation between individual subject areas, e.g. chemistry, physics, economics, psychology, etc., may be much greater. Further differences may be apparent if the literatures are measured in terms of articles, or index and abstract entries. It has not been possible to explore fully these subject differences within the resources available to DISISS and here reference can be made only to some of the published studies, dealing mainly with science and technology. Some data dealing with article and abstracts measures is given in section 4.1. Some of the differences between CLOSSS data and others may be due to the inclusion on CLOSSS of many annual reports, which may have a different pattern, especially lower growth rates and perhaps lower mortality rates. Other categories may also affect the results.

The best known curve for the growth of scientific serials is the one reported by Price (1956 et seq.) based on data from the World List of Scientific Periodicals. Price established that the number of all titles current and dead was doubling approximately every 15 years after an initial period from 1660 to 1760, in common with the number of journal articles, the combined stock of which totalled about six millions by the 1960s. The curve reported by Price is not corrected for mortality; thus of the c. 100,000 titles at 1960, the number currently published is about 30,000.

In Table 6 some estimates of growth rates and other characteristics in various non-social science subjects are given, for comparison with the data for social science subjects discussed in the previous section. Direct comparisons can be misleading because of the very different sizes of literature involved and the problems of defining subject boundaries. Most researchers have reported accelerating or exponential growth often over considerable periods of time for scientific serials; the points of inflection of many of the accelerating and exponential curves often beginning at the turn of last century, e.g. Conrad (1965) in biology and Sengupta (1974) in physiology. Anthony, East and Slater (1969) reported linear growth in the number of journals scanned for Physics Abstracts, but the effect of selection procedures may be an influence here.

The doubling period of a literature is a measure of growth used by a number of researchers. Vickery (1973) draws attention to the differences in doubling period depending on whether or not cumulative data are used; he quotes growth rate doubling periods for articles covered in some of the major scientific abstracting journals for different periods of time based on cumulative data; Psychological Abstracts (1949-1969) 7.4 years, Commonwealth Agricultural Bureau (1949-1968) 7.4 years, Biological

Abstracts (1949-1970) 7 years, but only 4.8 years and 4.7 years for INSPEC (1949-1970) and Index Medicus (1960-1969) respectively, and 4 years for Scientific and Technical Aerospace Reports (1963-1970) and International Aerospace Abstracts (1961-1970). Doubling periods established over a longer period of time are perhaps more reliable indicators for future growth.

Doubling periods for serial titles (based on the number of current and dead serials existing at selected dates) quoted by Price for science of 15 years, and by Orr and Leeds (1964) for biomedicine based on non-cumulated data may be more typical according to Vickery. Price also suggests that if a more stringent definition of the relevant scientific literature (articles rather than titles) or manpower is applied the doubling period approaches 20 years. Doubling periods are a convenient if rather crude measure of growth, and only really apply if the data fits closely to a geometric curve such as the exponential; otherwise the observed doubling period is likely to vary in length according to the starting date. At the other end of the scale Vickery cites the fact reported by Rolling that the annual production of nuclear science literature is now static with a consequent lengthening of the doubling period. The social science serial literature represented by CLOSSS has shown a doubling period of roughly 20 years since about 1920. Doubling periods based on non-cumulated CLOSSS data include c. 20 years for economics, c. 20 years for general social science journals, c. 15 years for education and c. 25 years for political science. The significance of these differences in doubling periods are not yet fully understood.

A study of the birth rate of serials in all subjects was made by examining BUCOP New Serial Titles for 1960 to 1973, taking a 10% sample at the 3rd quarter of each year to determine date of birth of new serials, excluding changes of title (Wootton, 1975 unpublished). On average 1,084 new titles appeared per year, and the growth trend was linear[1]. Mortality rates were calculated in the same way; 1971 (306 deaths), 1972 (291),

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[1] The estimated numbers of titles per year were as follows: 1960 (1,080), 1961 (900), 1962 (1,150), 1963 (1,240), 1964 (1,260), 1965 (1,190), 1966 (970), 1967 (1,090), 1968 (950), 1969 (1,140), 1970 (840), 1971 (1,110), 1972 (1,250) and 1973 (1,010).

1973 (300), and 1974 (300). The average number of annual additions to the serial population is about 800. New Serial Titles has a very wide coverage of different types and levels of serials. It is significant to note that growth during the period was not exponential.

2.3.6 Projections

The best prediction available for social science serials is that based on the CLOSSS time series. The very good fit to a straight line on a semi-logarithmic scale obtained for 1870 to 1970 gives an annual growth rate of about 3%. There is as yet no sign of a reduction in this growth rate, but there is a little recent evidence available to suggest that the growth rate of science and technology serials is falling slightly, and there are various reasons why the growth rate of social science serials should decline (among these reasons being paper shortages, price increases, reduced purchasing power of libraries, run-down of research and perhaps some disenchantment with the social sciences generally), although it may take a few more years before a firm trend appears. The straight line fitted to the CLOSSS data predicts approximately 4,850 serials in 1980 and 5,721 serials by 1985. The prediction for UK social science serials is 1,408 in 1980 and 1,620 in 1985; for US social science serials, 1,168 in 1980 and 1,353 in 1985.

The problems and dangers of prediction from exponential curves are well illustrated by an examination of the data gathered by Price (1956, 1963). In the mid-fifties it was asserted that some 100,000 scientific journals existed and that the number was doubling about every 15 years; this would result in about 300,000 titles by 1975 and around 750,000 by 1987. Yet, the UNESCO data for serials in all subjects reported in section 2.2.2 indicates that at the beginning of the 1970s the number of current serials (excluding much local and ephemeral material) was about 125,000. Much of the difficulty in prediction does not concern growth rates, which may be calculated with some accuracy from fairly small but representative samples of the literature, but the base number of titles on which the projection is made. In practice it may be useful to distinguish between growth rates of 'core' and 'peripheral' literatures, but this raises the serious problems already discussed of defining the meaning of 'core' and then identifying it with reasonable chance of general agreement.

Anderla (1973) gathered information on growth rates for various literatures; his figures vary between 3.5% and 14.4% per year, including a 10% per year growth in titles acquired by the National Lending Library for Science and Technology (NLLST), now British Library Lending Division (BLLD) - a figure grossly inflated by the gradually expanding coverage of the NLLST. The growth rate for scientific journals appears to be between 3.5%, 3.7% and 3.9% depending on the size of the current file recorded (30,000, 50,000 or 100,000 titles) (Anderla 1973, p.16). A generally agreed figure might be about 3.7% per year. Unfortunately, the data currently available does not enable us to discriminate between exponential growth and what might in reality be the early stages of a logistic process. The logistic process, which leads to an S - shaped curve describes growth under saturation.

2.4 Mortality of serial literature

2.4.1 'Apparent' and 'real' mortality

Mortality in the serial literature can be 'apparent' or 'real'. 'Apparent' deaths take place when titles of serials change but still continue as essentially the same publication, divide with the previous title disappearing entirely, or amalgamate. For the purpose of counting, these events lead respectively to no change in number, one additional current title, or one less title. 'Real' death occurs when a title ceases to be published in any form whatever. ('Hidden' death can, in theory, occur when a journal dies and its title is adopted by a new journal unconnected with the dead one, but this even must be very rare.)

Distinguishing between these various types of mortality in statistics of serial publications is difficult. Fortunately it is not of great importance even to a bibliometric analysis of growth. The numbers of titles affected by change of title, division or amalgamation are relatively small (11% of all serials and 13% of current serials had previous titles), and the latter two will to some extent cancel out. In this study the mortality value reported in Table 13 represents 'real' deaths.

2.4.2 Mortality rates of serial titles in social sciences

For measurement purposes, the death rate is the proportion of the titles current in year T which die in year T + 1. Data on the rate of mortality of social science serials has been extracted from the CLOSSS file. Of 4,107 serials listed that have started publication since 1820, 493 (12%) have since ceased. The data is summarized in Table 13 and Figure 11. The annual mortality rate varies around about 0.5% per year. The mortality rate rose between 1910 and 1950, then fell considerably; since the late 1950s it has tended to rise again. Although the percentage mortality rate has fallen and is still well below that of about 1950, the number of titles 'dying' per year is now greater than previously.

Another set of mortality statistics can be derived from the CLOSSS file. The analysis discussed above was performed only on those records for which both beginning and ending dates together were known; but, if the analysis is performed on records for which only an ending date[1] exists as well as for those with a beginning date also, the number of discontinued (i.e. dead titles) on the file is 1,595 out of 6,232. An analysis of mortality on the larger data set is discussed in DISISS Report B4, section 9.1.

2.4.3 Other evidence for mortality of serial titles

Some data on the mortality of psychology serials is given in a study by Daniel and Louttit (1953), who identified weaknesses in the professional system of French psychology by the rate of mortality of French psychological journals. Between 1850 and 1950 70% of the journals begun had ceased publication; in a comparable period rates for the USA were 50%, Germany (to 1934 only) 51% and for the UK only 21%.

Gottschalk and Desmond (1963) briefly considered growth and mortality rates in their study of the size of the scientific and technical journal literature. A sample of journals in radioactivity, radiology and radiography held at the Library of Congress was analysed; 66% had come into existence between 1900 and 1930 and some 33% had ceased publication during that time; by the mid-1950s over a third of the total had ceased publication. An analysis of bibliographies of serials, admittedly over 2 to 3-year periods only, for East and West Germany, USSR, France and the USA suggested a very low growth rate indeed for serial titles; it was inferred from this data that the phenomenal growth in serial titles assumed by most estimates could not be supported (p.193), and they concluded that if the increase was due to fertility it was successfully counterbalanced by a mortality rate, acting as a Malthusian check. Gottschalk and Desmond cited five further examples of mortality rates for serials: for France, using Raux's Répertoire de la Presse (1961) a 10% death rate for 1957-1960 in all subjects; in Aeronautical and Space Serial Publications:a World List (1962) only 1553 out of 4551 titles were current, indicating 66% mortality in 60 years and 10% for 1950-1960; the National Library of Medicine's Biomedical Serials cites over 9,000 titles, of which over 3,000 are presumed dead; the Library of Congress serial records(over an undefined period) indicate a 40% mortality rate for all subjects; and the World List of Scientific Periodicals indicates a mortality rate of 33% or some 15,000 titles. Orr and Leeds (1964) also based their data for medical serials on Biomedical Serials 1950-1960; of all serials alive in 1950 more than one third had died by 1961, and during the same period roughly the same proportion of serials born after 1951 also died.

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[1] In terms of the computer analysis ending date (field 6) only is used in conjunction with fields 21 and 22 (dealing with record linkages and subsequent titles (see Working Paper no. 8, section 2.3.1 and Appendix J, Bath University, 1973).

Very high mortality rates and short life spans were common amongst serials right up to the beginning of the present century (Brigham, 1947; Mott, 1968). Kuhlman (1940) analysed titles in the first edition (1927) of the Union List of Serials and found that defunct titles had existed for an average of 9.9 years; the continuing titles averaged 25.1 years. The Library of Congress compiled comparable data for the second edition (1943); average life span for defunct titles was then 11.4 years and 27.2 years for continuing titles. On the basis of the Union List of Serials (1927) data, life span for serials has tended to increase from the nineteenth century onwards. Neither average gives a true picture of the average life span of a serial since the dead are not typical of all and it cannot be predicted how long the current have still to live; this point should be noted in the context of the longevity data for current serials on CLOSSS discussed in the next paragraph. Barr (1967) made a sample check of World List of Scientific Periodicals (4th edition) and found that only 24,000 titles (40%) were actually current.

Longevity, defined as the length of time in years in which a serial with a given title has been published, is shown in Table 14 using the population of current social science serials recorded on CLOSSS, with 1970 as a reference point. The full data is summarized in Table 15; altogether, nearly 56% of titles have been published for less than 24 years, (approximately since 1945) and nearly 81% within the last 49 years (approximately since 1920). There are subject differences; education, environment and linguistics having a greater proportion of more recently established titles and architecture, criminology and statistics relatively fewer. To some extent lower longevity is a measure of the bibliographical newness of subjects. Irrespective of the differences between subjects there is more variation within the three younger periods analysed, than the oldest period. This suggests that all the subjects have a small but defined group of 'historical' titles which have been published for more than 50 years, but that since roughly 1920 subjects have grown at different rates. The data in Table 14 suggests, marginally, that what are usually considered as the well established disciplines have a higher proportion of longer lived journals; for example history, law, social policy and statistics. Education, linguistics and management seem to be relatively young bibliographically, although the former two subjects both have intellectual traditions reaching back to the nineteenth century. There may be a greater degree of continuity in the social science literature than is sometimes realized, and this should be borne in mind when current growth patterns are considered.

Lengyel (1967) discusses the survival rate of many of the pioneering social science periodicals recorded in WLOSSP. In France 15 out of 90 current in 1963 were established before 1910; in the UK and USA 13 each out of 87 and 114 respectively, and in Scandinavia 8 out of 31.

Compared with these other estimates of mortality, ranging from 20% to 70% over various periods, the figure of 12% derived from CLOSSS over nearly 150 years is exceedingly low. The CLOSSS file is certainly deficient in date data as well as in actual records of older titles; this probably results in an under-estimate of the mortality rate over the whole period - this seems likely, in view of the evidence, however tentative of shorter life span in the past. For the recent period, however, CLOSSS data is good, and the mortality rate is still low. This suggests that social science serial titles are less prone to mortality than serials in general. It would be useful to test this should more comprehensive data for the earlier periods become available. It is true that Daniel and Louttit found high rates of mortality in psychology, but their rate for UK titles was the lowest; if UK titles in general have a lower mortality than other serials, the bias of CLOSSS to relatively longer lived UK titles may be having an effect on the mortality rate calculated from the file. It is perhaps also true that CLOSSS is biased towards 'significant' journals (however defined - partially by citation, and by selecting during data collection in libraries); other data used in the various studies mentioned may relate to many more trivial and therefore ephemeral titles.

2.4.4 Implications of, and reasons for mortality of serial titles

One particular use of a calculated mortality rate for the serial literature is in estimating the total number of serial titles ever published. Comprehensive bibliographies of serials can be used to calculate the total stock in existence at a given time (Bryan, 1968, and section 2.2.4), but it would be difficult to calculate even approximately the total number of social science serials in, say, 1960 using the Union List of Serials. However, knowing the current production of social science serials and its growth rate one could calculate the number of serials current in 1960; then by using the average mortality rate from the first year serials are recorded, and cumulating the number of deaths up to 1960, the total of deaths could be added to the total current in 1960 to give an estimate of the total ever published. In view of the current lack of knowledge about the serial population as a whole and in various disciplines, a method such as that proposed above is of more than general interest. Some knowledge of the size of the total available literature, particularly at discipline levels can be gained in this way. It is of relevance for information service planning in estimating the total size of the literature, the levels of coverage achieved or possible, the potential scope of retrospective search facilities, and also for relating the observed and theoretical limits of 'Bradford sets' and for establishing the relationships between the so-called 'core' and 'peripheral' literatures.

Besides the statistical aspects of mortality the characteristics of the individual journals involved are of interest. Journal mortalities may reveal useful information on the performance and effectiveness of the primary literature. Journals may 'fail' for a variety of reasons, e.g. financial or personal. Of more interest to the information scientist are mortalities due to redundancy (functional obsolescence) or to competition among journals, which may result in merging or division, or even in a mere change in title. Changes in subject boundaries and interest can also result in death. On the whole the results from CLOSSS show that mortality itself is not a very important phenomenon when on the average less than 1% of titles in any year are affected; the birth of new journals is a much more frequent occurrence than death and has far greater implications for information services.

However, mortality and growth are not the only indicators of change in serials. An analysis of journal content, editorial policy and individual size in pages or articles published would reveal that many other changes are taking place, and could indicate how (or if) journals are continuously adapting to shifts in interests, and new demands in scientific communication.

2.5 Characteristics of social science serial literature

2.5.1 Current serials[1]

This section discusses the main characteristics of the social science serials current in 1970 and recorded on the CLOSSS file[2], and refers to other studies which supplement and complement the analysis of CLOSSS. It is worth pointing out again that serial titles are only one of the many indicators of size of the literature. There are cases where the actual number of articles produced provides a better indicator of literature characteristics. Some of these other indicators are discussed in sections 2.7 and 4.1.

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[1] The numbers of serials upon which these analyses are based vary because of some of the CLOSSS records are incomplete.

[2] Further analyses of the file are reported in DISISS Report B4 sections 9.0 to 14.0.

The analyses based on CLOSSS refer, except where stated, to serials generally; this applies both in this section and elsewhere in the report. The other two major categories, where use of terms may cause confusion, are periodicals and journals. Periodicals include all serials except monograph series; thus, for the purposes of CLOSSS fixed period reports, are also periodicals. Journals include what are normally considered as specialized research journals, but also include those containing a wide range of news, commerical, general, statistical, recreational and educational material.

(a) Type of serial

In 1970 the number of currently published serial titles on the CLOSSS file stood at 3,585. A group of 3,385 of these titles consisted of 96.7% (3,273) periodicals (i.e. non-monograph series), and 3.3% (112) monograph series and others.

(b) Form of serial

Table 16 shows a breakdown by type of serial for titles current in 1970 on the CLOSSS file. The group available for analysis consisted of 3,347 titles. Journals (i.e. specialized research journals, etc.) accounted for 73.9% (2,472) of titles current in 1970. On this basis the ratio of secondary to primary publications is about 1:25 (all serials) or about 1:16 (journals only). (See also section 2.6.2, and DISISS Report B4, section 10.0).

(c) Frequency of publication

The frequency of publication of a sample of 3,466 serials current at 1970 is given in Table 17. The result is not unexpected; few titles are published more than 12 times a year (3.7%); monthly publication (15.3%) probably covers the majority of news journals and journals of more popular or general interest; 8% of titles are published six times per year; nearly 28% are published quarterly. The second highest frequency recorded was annual issue; some journals do appear at this frequency but the majority of annuals are fixed period reports, which accounted for 9.4% of current serials in 1970. More detailed discussion of frequency of issue and publication patterns is given in DISISS Report B4, section 12.0.

(d) Type of issuing body

Table 18 gives the breakdown by type of issuing body for 3,300 titles current in 1970. About one third of all titles were published by learned societies or specialist associations and a further 22% by educational institutions of all types. Thus, 55% of serial publications appear to originate directly from bodies concerned with specialized subject interests or academic activities, although serials published by other organizations could also deal with such interests and activities. Commerical publishers publish fewer than 20% of social science serials. A significant proportion (18.4%) of serials originate from governmental and international bodies (see sections 4.8 and 4.9). An analysis of issuing body by subject, form and nature of contents of serials is given in DISISS Report B4, section 13.0.

(e) Nature of contents (Table 19)

The data on nature of contents is not easy to interpret because each journal on CLOSSS could be coded with up to 6 or more descriptions. Analysis of the rows in Table 19 does however produce useful descriptive information. Not surprisingly, articles of a research, topical or general nature, are the most common; 559 titles contained only articles, although it is more common to find articles present with at least 2 or 3 other forms (e.g. book reviews, news material). Book reviews and news material are the second and third most frequently occurring forms. Forms which occurred less frequently are statistical material, review articles, bibliographies and conference proceedings, Of the titlesexamined, some

368 carried review articles, but only 6 of the titles recorded carried review articles alone; from this evidence there appear to be many fewer 'review' journals in the social sciences than in the pure and applied sciences (see section 4.4). More detailed discussion of the nature of contents of serials, the relationship to subject,,country and issuing body, and co-occurrence of categories is given in DISISS Report B4, section 11.0.

A study of the proportion of pages in journals devoted to advertising matter was carried out on a group of titles in science, the social sciences and the humanities[1] (Wootton, 1975, unpublished). The decline in advertising matter in scientific journals may help to explain the decline in value (pages per £) reported in 2.5.1(j) below for the same set of journals; however, social science journals which increased their proportion of advertising matter, had much the smallest decline in value.

(f) Country of publication

Because the CLOSSS file is relatively deficient in titles produced outside the UK and US, and particularly in those published in Western Europe, the Soviet-bloc and Japan, it has been necessary to analyse secondary statistics and other sources of data. The main features to emerge from the analyses are that 55% of social science serials originate in the 28 countries of Western Europe and at least another 10% in the USA and Canada. This distribution is based on serials of all types; the concentration of scholarly research journals in these two areas may be even greater, but probably not exceeding the 83% recorded for the two areas on CLOSSS. Most countries publish journals across the whole spectrum of the social sciences but there is some specialization,e.g. psychology in the US. At a rough estimate at least 60% of serials in any of the major social sciences originate in Western Europe and North America. The USA and Federal Germany appear to produce a greater proportion

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[1]

		1960	1973
	N	% of pages devoted to advertising	
Science	(40)	33.9	7.8
Social sciences	(11)	14.8	20.1
Humanities	(10)	35.4	25.8

of monograph series than other countries. The remainder of the section discusses the evidence in greater detail, compares the validity of various estimates and the differences between social science and science.

The geographical distribution of serial titles in all subjects is shown on Table 20, broken down into 11 main regions. The first set of figures is based on 78 countries whose production (with the exception of the USA and Canada) is recorded in Table 9.3 of the UNESCO Statistical Yearbook (1972) (and broken down by detailed subject headings). It can be seen that the regional distribution on the first set of figures is fairly similar to that of the second set of figures (the large increase for Asia in the second set is due to the inclusion of Indian titles). The second set of figures[1] is more comprehensive and therefore more useful, because it includes informed estimates of production for all the main serial producing countries in the work; for example, the Western Europe total includes production in the UK, Finland, Norway, Austria and Portugal (countries which do not appear in the 78 country data set).

From Table 20 it would appear that over half (54.5%) of current serial publications originate in Western Europe broadly defined (28 countries listed on Table 20). It may seem surprising that only 10.3% of the titles originate in North America (largely the USA), but this is thrice the number produced by the UK or Japan, and several thousand more than Federal Germany or India (whose high figure of 7,300 in 1971 may be due to the inclusion of varied types of material not usually recorded for other countries). Further research may reveal that more serials are produced in the USA, if the definition was stretched to include other types (e.g. government publications, popular journals and magazines). However, if all official serials were included, another source of variation could be introduced, since the figures recorded would then depend on the publishing policies of and descriptive categories chosen by official bodies; whether items come out in series or as separates, and whether there are a few large series or numerous small ones, are largely matters of local circumstances. Similarly, there are suspiciously high totals recorded (relative to other important producers) for some European countries (e.g. Finland, Austria, Portugal), although the level of economic, cultural and social development may have an important effect (see section 4.11 for discussion).

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[1] The total of 111,000 titles current in c. 1970 forms a subset of the estimate of 123,000 titles current in the period 1968-1970 (based on UNESCO data with estimates for Federal Germany and the UK); the difference of 12,000 titles accounts for production in the remaining countries of the world(estimated at between 63 and 79 countries, depending on the total number of sovereign units recognized and the number which make a more or less regular return of book production statistics) and are a subset of the 111,000 titles estimated from the crude (unsupplemented) data alone. Because the figures relate to data from several years the values given are subject to an error of ± 1,000 titles.

Given the data currently available, Tables 20 and 21 give only the broadest impression of the geographical distribution of production, but there is no reason to believe that the general pattern is incorrect; it must however be remembered that these statistics relate to all types and subjects of serials, and not to specialized academic and research journals only.

Table 21 shows the geographical distribution of titles on CLOSSS and compares it with a distribution for social science titles derived from UNESCO and other estimates (mostly based on WLOSSP, 4th edition). Both CLOSSS and UNESCO data is based on a fairly wide definition of the social sciences. Nearly 56% of titles on CLOSSS originate from Western Europe and 27% from North America (more than twice the proportion recorded for the UNESCO data). The CLOSSS distribution certainly reflects bias in coverage, and UK titles are certainly proportionately over-represented in the Western Europe group. On balance the UNESCO data probably gives a more reliable picture of the regional distribution of current social science serials. The general impression from the UNESCO data that at least 66% of social science serials come from Western Europe and North American seems intuitively correct. The USSR and Eastern Europe together account for 15% of social science titles; Japan and Latin America follow with 6% and 4% respectively. African and Asian countries still appear to be relatively unimportant quantitatively in production of social science serials although their importance is bound to grow. Many African and Asian social scientists do publish in European and North American journals, and are likely to continue to do so.

Some information on the relative importance of various social science subjects in the regional groups is given in Table 22 using UNESCO data. Asia, Black Africa and the Arab World possess a smaller proportion of serials classified as politics and economics than the world as a whole, and like Latin America have (in proportion) more journals classified as education. Australasia has a relatively high proportion of its serials classified as geographical. In the USSR, serials classified as management and commerce represent nearly half of all serial titles; in Western Europe the proportion is 16.4%. The significance of these differences in subject distribution between regional areas is not at all clear, and some of the variation may be due to the effects of local subject classification. The main drawback of Table 22 is that some of the most important serial producing countries are missing, particularly the USA, Canada, Federal Germany, the UK, and India. Although estimates of total production have been made for these missing countries no subject breakdown for them within the social sciences can be made easily or with any certainty[1] except on CLOSSS, which provides substantial data for the UK and USA only. However a good impression of the subject breakdown within the social sciences can be obtained for those countries for which data is available in the UNESCO Statistical Yearbook (Table 23). Political science and economics titles (class 5) do not always form the largest group; for instance, in Denmark, history and biography are larger, and in Spain education is larger. On the other hand, Belgium (36.7%) and Italy (46.2%) have an unusually large number of titles classified as political science and economics. Table 24 shows serials in social science subjects as a percentage of serials in all subjects, using the data in Table 23.

Although the CLOSSS data is only really representative for a subject breakdown within the social sciences by country for the UK and USA, some data for other countries and groups of countries is given in Tables 25 and 43. Grouping five EEC countries together produces a reasonable body of data for a comparison between the UK, USA and North West Europe. The importance of the USA for psychology serials, and of the UK and USA for education serials, is shown clearly. A convenient summary for all Western Europe excluding the UK (27 countries) is given in the last column; economics accounts for by far the most important subject for serial titles, followed at a distance by political science and education; some 8% of titles were classified as dealing with the social sciences as a whole. There has been very little reliable data at all reported on the composition of social science serial literature in different countries. Saito (1967) has reported on a study of Japanese social science periodicals; in a group of 278 journals in the National Diet Library 50% were concerned with economics, 28% with law, 9% with sociology and anthropology, 7% with politics and public administration, 4% with human geography and 2% with philosophy.

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[1] A reasonable subject breakdown for UK social science serials can also be obtained from Woodworth (1973) (Table 5) to supplement the distribution from CLOSSS shown in Table 25. Willings European Press Guide and the Standard Periodical Directory provide a rough but not very satisfactory breakdown for Federal Germany, and the US and Canada respectively, an inability to control for depth of subject coverage and form of material are major drawbacks to the use of these sources. The CLOSSS data for the USA is adequate, but poor for Federal Germany, and India.

Using the same country groupings and countries as in Table 25, data on the types of issuing body and types of serial for current serials is given in Tables 26 and 27 respectively. In the USA a significantly higher proportion of titles originate in educational institutions. In Federal Germany an unusually high proportion (59%) of serials are issued by commercial publishers, and within the five EEC countries 29% originate in this way, compared with 16% in the USA and 17% in the UK. International organizations play a significant part in serial publishing in the five EEC countries. The UK appears to have a higher proportion of government publishing, but this probably reflects the bias of the CLOSSS data collection towards UK titles.

Journals form the main type of serial in all countries and groups considered. The large proportion of fixed period (mostly annual) reports listed for the UK may again reflect the bias of the data collection for the UK. The USA and Federal Germany appear to have a greater production of monograph series than the UK.

Although relevant to the analysis of growth in section 2.3 the data in Table 28 should also be looked at in the context of geographical distribution of production.

Table 29 is an attempt to indicate from which areas of the world serials dealing with particular subjects originate. Without data from North America the table is less than complete, but if notional proportions of 10% to 15% (see Table 20) for North America (largely the USA) were added to Western Europe, the share of these two regions would account for between 55% and 65% of all serials in any of the subjects listed. Nonetheless, the proportion of material originating from the rest of the world is substantial - at least 30% of serial titles. The coverage of information services needs to take account of this proportion originating outside Western Europe and North America, but this need cannot be properly assessed without a better knowledge of the quality and relevance of this literature. Most citation studies indicate that, in spite of its large size, the literature published outside Western Europe and North America is not regarded as very important; language and cultural barriers, and the attractions for African, Asian and Latin American researchers of publishing in Western journals, have an effect. East European citation studies on the other hand, suggest that in those countries Western journals are less important than their quantity would suggest. Evidence for a bias to Anglo-American and West European literature comes from citation studies of Indian and Nigerian literature (Mitra, 1972; Aiyepeku, 1972 and 1973). The ratio of East European to Western journals in Russian citation studies is far higher than in Western citation studies.

The geographical distribution of social science serial literature by country is shown in Tables 30 and 31. Table 30 is an analysis of the geographical composition of the CLOSSS file, which cannot however be considered as a completely accurate geographical distribution of world production because of the known regional bias of the file. It is doubtful if WLOSSP gives a markedly better distribution (Table 31), but the data is a useful supplement nonetheless; here again there is known to be considerable selectivity in the serials chosen for recording on that list. Neither list is comprehensive, although CLOSSS has very nearly complete coverage of UK social science serials.

If little reliance can be placed on the absolute totals recorded for any country, then the relative contribution of different countries may be more reliable. Comparing Tables 30 and 31 on a relative basis, it is still a matter of opinion which relative order is more representative. Although entries included in WLOSSP are made selectively, they are chosen by national representatives, who could be relied upon, within the criteria for the list, to identify the majority of relevant publications currently published in the country. This method of compilation gives a better relative order than the method of compilation used for CLOSSS based mainly on a gross selection from library stocks and citations. Such a difference in collection policy does not detract from the suitability of CLOSSS for providing data for other analyses, but it does lessen its suitability for a geographical analysis.

A comparison between ranks of countries on WLOSSP (4th edition) and CLOSSS is instructive (Table 30). In the top five countries, the differences in rank are clear but not of great individual importance. From the UNESCO data it is clear that the USA has the largest production of titles in all subjects, and it is reasonable to assume that it produces most social science titles (the percentage share of all serials held by social science titles appears to be fairly constant between countries - in estimating various productions a figure of 30% has been used in this survey[1]). The UK, Federal Germany and Italy make up the rest of the top five on either CLOSSS or WLOSSP. India and Japan are of similar importance on CLOSSS or WLOSSP data; but CLOSSS severely under-estimates USSR production. CLOSSS probably overrates the relative importance of Switzerland, although it is the source of many important international journals. Brazil is probably more accurately represented in relative position on WLOSSP than CLOSSS. Canada and Australia, both important in English language terms, are given a lower relative rank by WLOSSP than by CLOSSS. The Netherlands, Belgium, and Spain, and to a lesser extent the Eastern European countries and the Scandinavian countries, appear as significant although not relatively high ranking producers (tenth or above in WLOSSP terms).

A number of useful surveys of social science periodicals in different countries have been reported; for Brazil (de Medina, 1967), France (Meyriat, 1967), India (Damle, 1967), Japan (Saito, 1967), Mexico (Batalla and Navarro, 1967), Poland (Sczepanski, 1967), United Kingdom (MacRae, 1967) and the USA (Bell, 1967). Although these studies do not contribute much to the knowledge of size and growth, they give useful information on such characteristics as editorial arrangements, responsibility for content, staffing, finance, publication procedures, nature and subject coverage of contents, readership, circulation and international scope. Similar studies could well be repeated using more recent data.

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[1] Estimates of the numbers of current social science serials produced in various countries have been calculated on the basis that 30% of all current serials are of relevance to the social sciences. The value of 30% is an average reached by analysing the subject classified data on serials in the UNESCO Statistical Yearbook (Table 9.3).

Gottschalk and Desmond (1963) and Barr (1967) have provided estimates of the geographical distribution of scientific and technical serials, at the Library of Congress (1961) and the British Library Lending Division (1965) respectively. The estimates agree reasonably well, although Barr's estimate gives the UK 11.3% of the total as against 6.4% in Gottschalk and Desmond. The USA and Canada appear to have about 20% of the world's scientific and technical serials (1961/1965); in 1969/1971, they had about 13% of the world's social science serials. The USSR had about 7% of world scientific and technical serials (1961/1965) and 8% of the social science serials (1969/1971).

Barr (1972b) reports a further survey of currently received or ordered titles at the British Library, which by that date included a substantial collection of social science titles and some in the humanities. This survey amounts to a geographical analysis of a highly representative sample of all serial titles in all subjects except the humanities; of titles currently received 7,285 (19.9%) were from the USA; 4,789 (13.1%) from the UK, 11,766 (32.1%) from Western Europe; 5,593 (15.3%) from Eastern Europe and the USSR; 1,578 (4.3%) from South America; 3.165 (8.6%) from Asia; 2,423 (6.6%) from other countries (Australasia, Canada, Africa, etc.).

(g) Language of contents, and abstracts

An analysis of language of contents was made from a group of 2,906 titles current in 1970 (Table 32). Up to five languages could be coded for any one serial title. The overwhelming bias of the CLOSSS file to English language titles (80%) is apparent. Because some 40% of titles listed on CLOSSS originate from countries where English is not the main language or is only one of the main languages compared with about 65% recorded by the UNESCO statistics (section 2.5.1(f)), the proportions accounted for by the other languages, and particularly by French, German, Spanish, Russian, Italian and Japanese, are seriously underestimated on CLOSSS. In the present state of knowledge the distribution of social science titles by country, for example as recorded by the UNESCO statistics, provides a better estimate of language distribution, making due allowance for such phenomena as English language journals published in the Netherlands or Japan.

An analysis by Lengyel (1967) of 1,295 titles listed in WLOSSP 3rd edition (1963) showed that 30% were in English, published in 37 different countries. The French language accounted for 13% of titles (53% published in France, 16% in Belgium, and the rest in 26 other countries). Other values reported were Spanish, 12%; Slavonic, 7%; German, 6%; Italian, 6%; Japanese, 4.5%; Portuguese, 3.5%; Dutch, Flemish and Afrikaans, each 2.5%; Hungarian, 2%; and Swedish, Norwegian, Danish, each 2%. Other languages together made up 11.5%. None of the titles in WLOSSP was published in the indigenous languages of the Indian subcontinent or Africa.

The 1967 analysis has been followed up again by Lengyel (in Chiva, 1974), who analysed the language distribution of social science serials using data from the proposed revision of the World List of Social Science Periodicals. A group of 2,650 serial titles, current at the beginning of 1973 and drawn from 110 countries, gave this language breakdown: 40% wholly or partly in English (30% published in the US, 15% in the UK, 9% in India, and 46% in 60 other countries); 14% in French (50% published in France and 50% in 40 other countries); 10% in Spanish; 9% in Slavonic languages; 8% in German; and 4% each in Portuguese, Italian and Japanese. Thus, 93% of all social science periodicals are published in one of 8 languages or language groups.

Separate language editions are one way in which the language barrier can be overcome; some rather limited data on this topic is given in Table 33. Multi-language edition publication is a very rare occurrence recorded in only 78 out of some 3,500 currently published titles in 1970 (2.2%); the actual number of journals involved is fewer, since some publish in up to four different languages.

Data from the World List of Social Science Periodicals indicates that there has recently been a decisive increase in multi-lingual periodicals - both in those publishing articles in more than one language, and in those which appear in separate language editions (Lengyel, in Chiva, 1974).

Data on the language of article abstracts contained in social science journals on CLOSSS is given in Table 34 (but, as can be seen from Table 35, this information was gathered for only about one third of all serials carrying abstracts). The provision of abstracts is limited in the main to five languages, of which four are European and one Slavonic. On this evidence the academic social sciences are something of a linguistic preserve. Wider dissemination of research results and studies would require as a first step the preparation of more vernacular language abstracts; even though English is widely understood throughout the world, it is wrong to assume that it can ever be the sole linguistic medium for a large part of the social sciences. It is indisputable that much published work in the social sciences is of little more than local relevance, but there is also a growing body of methodological, conceptual, and theoretical work, often combined with valuable empirical data, which is of value to social scientists and essential to the intellectual progress of the discipline, in whatever part of the world (geographical or linguistic) researchers are located.

Lengyel (in Chiva, 1974) observes that the number of journals which feature abstracts or content pages in other languages is greatest in the lesser known languages, but smaller amongst Spanish and French and virtually non-existent in English language journals; this situation may however gradually improve. Only in the USSR is a conscious effort made to cater for local linguistic variety.

(h) Subject

Some of the data in Table 36 has already been given in Table 4, where the subject distribution of the titles based on the allocation of one subject code was tabulated. The index values, based on all codes, given in the last column of Table 36 are an attempt to use more fully the data on the subject distribution of titles. In column four the row total based on all codes is given; the total of 978 titles current for economics is derived from a total of 711 titles classified as economics only, 225 titles classified as economics plus one other subject, and 42 titles classified as economics plus two or more other subjects. The values given in the last column (calculated in the same way as the percentages given in column five based on sets of titles coded once only) are no more than indicators of the relative importance of each set of titles described by one or more subject codes.

The main results of this analysis are shown in the second part of Table 36, where the ranks and proportional share of the top 11 subjects are given. On both single and multiple codes, economics is the most important subject and slightly increases its share of current titles on multiple codes. On this data economics serials appear to be at least twice as numerous as serials in any other subject. This is quite a significant finding, although it may be slightly affected by bias in coverage of the CLOSSS file. The absolute prominence of economics is not indicated by the data on Table 5, using a sample of the world social sciences serial literature and that of the UK alone; however, with this data a firm conclusion is not possible because economics and political science are grouped together. With multiple codes political science replaces education as the second most important subject.

The relative order of sociology, psychology, linguistics, and management is unchanged whichever set of data is used - single or multiple codes. On the other hand, the relative order of law, social policy, geography and sociology is changed considerably. The reasons for these differences may partly be the results of classification decisions by the data collectors in the allocation of multiple codes.

Because serial titles could be classified on the CLOSSS file by more than one subject an inevitable difficulty is introduced, which can only be completely overcome by fabricating a measure (based on proportional allocation of units or their fractions to classes) to allow comparison between the different sets of data; such a measure is difficult to construct and is of little practical use. Multiple subject coding is a more realistic approach than a rigid exclusive single classification of titles, and it is quite evident that two or more subjects can have a claim on any one journal. In this way the data gives some idea (however subjective the allocation of subject codes to titles) of multidisciplinarity in the social science literature. It suggests for example that serials dealing with linguistics, management, sociology, political science and history - half the serials in all of these subjects are coded with at least one other subject code - are more 'multidisciplinary' than those dealing with economics, education, law and geography. It is not however clear what this means; it can hardly mean that the former subjects are more related to other subjects than the latter, because education and geography probably draw from, and perhaps contribute to, more subjects than say, political science. It may indicate how closely knit writers in certain fields are as a group.

(i) Presence of abstracts (Table 35)

An analysis of 2,957 titles current in 1970 revealed that abstracts accompanied all articles in 16% of titles and some articles in 5.4% of titles. The high proportion of titles (78.6%) containing no abstracts may be misleading because it relates to all serials and not to specialized research journals alone.

(j) Price (Table 37)

The data collected on subscription price in 1969 is of little relevance now (1975), because of inflation and rising production costs. However, the relative distribution of prices of serials may not be greatly affected; in 1969 terms there was a very large number of titles occurring in one price category (£2.00 - £4.99). From this one can infer that the subscription costs to libraries of many social science titles are similar, so that in many cases price may not be a very significant factor in deciding whether or not to purchase a given title. At 1969 prices the number of titles costing more than £10.00 per annum was very small; this may be contrasted with generally higher subscriptions for science journals, which nevertheless may represent better value if price is related to number of articles or pages per annum.

The annual survey of periodical prices published since 1966 in the

Library Association Record is a useful source of data, based on a sample of important journals in a variety of subject fields with no restriction on language, price or country of origin. The latest available survey (Merriman, 1974) shows that the average price of all humanities and social sciences periodicals was £8.60 in 1974, representing a 15.2% increase on the previous year; comparable figures for medicine were £17.31 and 12.1% and for science and technology, £28.85 and 18.9%. The average price for all periodicals in the sample was £19.78, with a 17.6% increase on 1973 prices. Some data on individual social science subjects is available. In 1974 the average price of periodicals in the following subjects was as follows: education and child psychology £7.24; political economy and politics, £7.41; management, £7.79; sociology, £8.86; law and criminology, £10.63; economics and trade, £11.33; and psychology, £16.31.

The prices given by Merriman are not broken down further except into a category of between £0.50 and £25.00; in this group the average price of humanities and social science periodicals was £7.45. There were 290 out of 1,661 titles (17%) priced at over £25.00 in 1974; on CLOSSS in 1969 only 0.6% of titles were priced at more than £25.00. From the two sets of data (admittedly not directly comparable) a rough but effective idea of the extent of inflation can be gained between 1969 and 1974. On CLOSSS, discounting serials priced at less than £0.50, those which are free, or limited to members, or which have varied subscription prices, the majority (60.8%) could be obtained for less than £4.99; by 1974 the average price on Merriman's data for humanities and social science periodicals was £8.60.

The fact that most social science journals come within a narrower price band than science journals may be due largely to the much greater differences in size among science journals, which in turn may be a reflection of the different markets - in scale and wealth - for science and social science journals.

Data on the change in real value of journals between 1960 and 1973 for a group of journals using pages of text per £ as a measure is available[1] (Wootton, 1975, unpublished). The data on pages of text used in this study is reproduced in section 4.1(2) below. The small numbers of serials in some cells make the detailed results rather unreliable, but the general picture by subject and by type of publisher is clear. There has been a general decline in value for all journals by 17%, with serials published by societies showing a 28% fall. Social science journals appear to have changed least in value, and those published by societies have actually increased in value.

(k) Number of articles (Table 38)

The definition of an article used in the coding included authored and unauthored contributions, including review articles but not book reviews; the category would thus include reports, communications, some types of news items and research notes.

Ignoring the 10.2% of titles which did not carry any articles, the percentage distribution of articles in the 2,672 serials which did carry them is given in the last column of Table 38. Apart from serials carrying only one article or more than 100 articles, the distribution of articles per year is skewed towards the lower end of the range (12.5%, 2 - 9 articles; 19.5%, 10 - 19 articles; 15.4%, 20 - 29 articles; 10.6% 30 - 39 articles, and so on, down to 1.5% with 90 - 99 articles). Nearly 11% of serials carried only one article per year, and 11.6% carried one hundred or more articles per year.

Wood and Ferguson (1974) carried out a study using a sample of 89 titles taken at random from CLOSSS. On average the titles contained 47 articles a year, each with an average length of 6.9 pages. For comparison, Wood and

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[1] Pages of text (excluding advertising matter) per £: change in real value, 1960-1973 (allowing for changes in the Retail Price Index).

	Commercial		Society		All	
Science	(22)	- 6%	(18)	-30%	(40)	-17%
Social science	(6)	- 4%	(5)	+10%	(11)	- 3%
Humanities	(3)	-21%	(7)	-21%	(10)	-21%
All	(31)	- 7%	(30)	-28%	(61)	-17%

(Figures in brackets refer to number of journals in the sample in each category.)

Ferguson reported the the average annual number of articles in a sample of science and technology titles was 85, with an average length of 7.4 pages.

2.5.2 Characteristics of current social science serials by subject

Tables 39 to 48 give the results of analyses of the main characteristics of current serials on the CLOSSS file broken down by subject. The tables are largely self explanatory, but a few significant features are mentioned here.

Anthropology and archaeology, and to a lesser extent geography and history, have a greater proportion of monograph series (Table 39). The analysis of different forms of serial (Table 40) reveals that there is substantial variation between subjects in the composition of serial literature. Besides journals, annual and other periodic reports appear as the most important type; 27% of social policy serials fall in this category. The majority of serials appeared 1, 4, 6 or 12 times per year (Table 41); architecture and management, both largely practitioner fields, had the highest proportion of monthlies (43% and 30% respectively). Commercial sources issued 10% of all economics serials (Table 42).

The high proportion (51%) of law serials issued by educational institutions reflects the many legal periodicals published in universities and colleges in the United States. Government sources were responsible for 38% of criminology serials, and for between 20% and 24% of economics, social science and social policy serials. In the UK, economics is the largest area of serials publishing, with more than twice the number in education and political sciences (Table 43); in the USA the difference between economics and other social sciences was less. Because CLOSSS is deficient in coverage of serials from other countries further analysis of Table 43 would be misleading; the reader is referred back to section 2.5.1(f) for further discussion.

The presence of abstracts with articles was highest in psychology (45%) and statistical serials (37%) (Table 44); the low proportion (10%) for economics reflects the broad range of types of journals found in the subject - many are not research journals and thus less likely to carry article abstracts. Table 45 (language of abstracts) and Table 46 (language editions) can be interpreted as follows: the former shows that economics, geography and psychology serials are more likely to carry abstracts in several languages; the latter, that some subjects appear to have no serials with more than one language edition, and in those which do, there is considerable variation in the number of other languages used.

Over 60% of serials, in archaeology (79%), criminology (60%), history (64%), and anthropology (62%), carried fewer than 19 articles per year (Table 47). Architecture, management, and psychology included the lowest proportion of serials with fewer than 19 articles per year. Architecture serials are clearly the most atypical social science serials, and the subject was mainly included on CLOSSS because of its relevance to planning.

The data on subscription price is out of date (see section 2.5.1(j)), but gives an indication of the relative position of subjects at 1969/1970; of the main disciplines only psychology appeared to have a significant proportion of serials above £10.00 (Table 48).

2.5.3 Changes over time in characteristics

The analysis which follows is based on the combination of the information on serial characteristics collected from 1969 issues (or from the last year of publication if the journal ceased before 1969) with the known life spans of the serials. The changes recorded should be interpreted to reflect changes in the composition of the serial population rather than changes in individual serials. It is assumed, therefore, that the characterstics studied will have been stable over time for any given serial. Whilst the subject content and the sort of publisher are not likely to have changed, the frequency of issue and serial description could well have done so. The results must therefore be viewed in this light.

(a) Subject distribution of serial titles, 1880-1970 (Table 49)

The ten yearly and five yearly observations taken individually give an impression of CLOSSS file content in successive periods, and taken together show changes over time in individual subjects and the relative proportion of the literature represented by each subject. Since 1910 it looks as if the share of education, linguistics, and psychology serials has increased overall; this may reflect other changes in the structure of the social sciences.

(b) Form of serial, 1880-1970 (Table 50)

On the assumption that the primary nature of serial publication does not change greatly over time, and that if it does, it affects only a very small proportion of cases, Table 50 shows that the relative importance of different types of serial has altered very little since 1880. The development of secondary services (abstracts, indexes, contents list, bibliography) lagged behind the primary literature (see section 2.7), but the present relative distribution of types had become established by 1960. During the period, primary journals have never constituted less than 56% of the serial literature, or 70% since 1940. These ratios of different serials may change in the future due to changes in bibliographical practices, e.g. serial as defined for the purpose of the International Serials Data System (ISDS) permits inclusion of monograph series, many of which were not formerly considered serials by many bibliographers. However, the CLOSSS collection of monograph series is likely to be incomplete, and their real share of the serial population may be a good deal higher even at present. It is impossible to tell without further data collection how far incomplete data collection affects the relative share of other classes.

(c) Type of issuing body, 1880-1970 (Table 51)

Any serial could be given one or two codes to represent the type of body responsible for its production. To simplify the tabulation, only single-coded serials were allowed; the inclusion of multiple coded serials would make very little difference to the analyses.

Taking 1900 as a base, some changes are apparent. The proportion of serials published by associations appears to have fallen by some

13% by 1970. The proportions published by educational institutions and governmental bodies have increased over the same period by more than 14% and 3% respectively. The increases in education (mainly higher education) and government sectors are not surprising. The proportion of social science serials produced by commercial publishers has fluctuated, but remained at about 20% over the whole period. The proportion of international bodies involved in publishing has also increased, from 2.8% in 1910 to 5.2% in 1970.

(d) Frequency of publication, 1880-1970 (Table 52)

Between 1900 and 1970 the share of serials issued annually fell from 30.9% to 20%, whereas those issued quarterly increased their share from 17.2% to 27.8%. The increase in share of those published 6 times a year was less - about 1.3%. These trends may be, however, highly unreliable because the data analysed related to 1969/70 and makes no allowance for the very likely changes in frequency to which journals have been subject in the past.

2.5.4 Characteristics of the total social science serial literature (Tables 53 to 65)

An analysis was made of all serials (current and dead) listed on the CLOSSS file, up to 1973/1974, thus including titles newly published since 1971 and subsequently added to the file (the analyses discussed previously in sections 2.5.1 and 2.5.2 were based on titles published up until 1970 only). Because only 12% of titles on CLOSSS are not currently published (see section 2.4.2) the results of the analyses proved to be very similar to those based on current titles only. The full data is reported in Tables 53 to 65, and calls for little additional comment.

Publications by political groups (Table 56) occupy a greater proportion of the total literature than of the current literature; much political material is relatively ephemeral and a higher mortality rate is not surprising. The overall number of articles published per year for all serials is similar to that for current serials (Table 65). The higher proportion of serials with one article per year may reflect no longer existent minor serials, or perhaps a greater proportion of defunct annual reports.

2.6 Size, growth and characteristics of the secondary literature

The machine file of CLOSSS contains information on a number of secondary serials (about 160 titles in all). In addition, a search was made of the main inventories and bibliographical reference works, and over 1,000 records were collected for a separate file using the CLOSSS data format. The criteria for including material in the separate file were applied fairly liberally, so that as well as abstracting and indexing journals proper, primary journals carrying secondary material, various bulletins, regular and irregular bibliographies, and accession lists were included. This policy was felt to be correct, so long as the services recorded were of a serial nature and generally available (i.e. not restricted). No restrictions were placed on country of origin or language, and the subject coverage was similar to CLOSSS. Thus the data reflected the many forms of secondary literature available locally, nationally and internationally in the social sciences. The coverage of international secondary services must be virtually complete (up to 1969); the file is not exhaustive at local or national level, but the main publicly available services are included, and those produced solely for 'in-house' use excluded. As there may be 'core' primary journals, so there appear to be 'core' secondary journals, having an international coverage and circulation (e.g. Sociological Abstracts, Psychological Abstracts, International Bibliography of the Social Sciences). 'Core' secondary serials, at the world level, will approximate in number to the titles recorded on CLOSSS, which at present (1974) number no more than 200. The DISISS secondary literature file was weeded down to 980 titles for the analyses reported here, mainly by excluding some fringe material which was more relevant to scientific and technological subjects. Thus there are probably about 1,000 secondary serials - i.e. serials consisting of or containing secondary material - which are produced regularly and are publicly available; added to this figure there may be another 1,000 or so important 'in-house' documentation services (produced by information units and not usually available to the public), which are likely to receive fairly heavy use and go to meet some of the bibliographical needs of working social scientists in industry and the professions. Wood and Bower (1971) estimate that there are some 3,000 secondary services relevant to science and technology. In section 2.5.2(b) the ratio of primary to secondary literature (based on the number of publicly available services) was mentioned; a ratio of about 20 primary serials (periodicals plus other types) for every secondary serial was found in the social sciences. The relationship between size and growth trends for primary and secondary serials is given in section 2.7.1.

2.6.1 Size

Data on the size of the secondary literature in numbers of titles of services is given in Table 66. Ideally, for a full picture of the size of secondary service activity, data is required on the numbers of abstracts and index entries produced; some data on this is reported in section 4.1(3). Owing to the coverage and age of the bibliographical sources used to compile the DISISS list of titles, the values for 1969-1971 are not likely to be complete; extra data collection would be required to bring the picture up to date (i.e. to 1975). Since 1968, it is unlikely that fewer than 20 new services of any kind have appeared per year, so another 100 titles can confidently be added. Although the file contains 980 titles, only those titles for which both a beginning and an ending date was known have been used for the analysis. Two totals are given: the sum of both current and dead titles; and the number of current titles only. The most important statistic is the doubling of the number of currently produced secondary serials between 1952 and 1968.

2.6.2 Growth

In Figure 12 the data in Table 66 has been plotted on an arithmetic scale. Two components on the growth curve for 1900 to 1968 are visible, both of which have a steady linear trend. From 1900 to 1945 on average 3 new titles were recorded per year. Since 1946, and up to 1968, an average of 23 new titles were recorded per year. The marked growth in secondary literature after 1945 is quite expected - a similar leap is apparent in the primary serial literature at the same time, markedly in psychology and less so for other subjects (Figure 2). The rather abrupt change in the slope at 1945 may be due to bias in data collection, but as the trend before then is a regular one this is unlikely to be the whole reason. The immediate post-war period was characterized by steady growth in publication of all types as a result of new developments in research, education and social policy. This meant there was a need for more bibliographical control. An analysis of the services begun since 1945 suggests that new services were created unsystematically to serve fairly small groups of users whose immediate needs were unfulfilled and who would use any secondary service as being better than none. After 25 years of growth of the secondary literature there is still general dissatisfaction with bibliographical tools in the social sciences. Although there have been important advances in control at major subject levels in psychology (Psychological Abstracts) and in economics through the efforts of the American Economic Association (Journal of Economic Literature), the development of services to meet needs of specialized subject areas and user groups has lagged behind.

2.6.3 Characteristics

In the three analyses which follow, the numbers of serials investigated vary due to the incompleteness of some of the data.

(a) Frequency of issue (Table 68)

Quarterly publication was the most common frequency in the group (30.3%), and monthly the next (27.1%). Annual bibliographies accounted for some 10% of titles. Just over 6% of all services were published more than 12 times a year.

(b) Country of publication (Table 69)

The same countries (USA, France, and UK) were the top 3 producers of both secondary serials and primary serials. Italy appears to be much less important as a producer of secondary than of primary serials. The data for countries below the top 4 is likely to be incomplete, but the services identified in each one are likely to be the most significant. Much the same considerations apply as to the CLOSSS data; an exhaustive enumeration of all secondary serials was a task beyond the resources of DISISS. The inventory of secondary services proposed under the UNISIST programme will provide further data on their geographical distribution.

(c) Subject distribution

The subject distribution shown by the file (Table 70) is likely to be more accurate than the geographical distribution. General social science secondary serials account for nearly a quarter of the total; a detailed analysis would reveal that many of them serve fairly specific subject areas as well. Economics, education and political science have the largest primary serial and monograph literatures as well as the largest secondary literatures. The relatively small proportion accounted for by sociology, management and psychology may reflect success in developing a few useful and effective tools, obviating the development of a fragmented network of small services providing relatively limited coverage, perhaps of the main journals only, and for current rather than retrospective use.

2.7 Comparisons between different literatures and subjects

The ability to compare size and growth rates of different literatures and subjects is very much constrained by the measures used (titles, articles, abstracts, etc.), the length of time series available, and the criteria used to define subject boundaries. The comparisons reported here have used mainly serial and monograph titles, which, as pointed out earlier, are convenient as measures but not the best nor the only measures. It would be useful to compare literatures in terms of articles and physical bulk as well as titles, but unfortunately data on articles and physical size is neither available in sufficient quantity nor reliable enough in the social sciences.

2.7.1 Size and growth of primary and secondary serials and monographs

The relative growth rates of primary and secondary literatures have been illustrated by Price (1956, 1961, etc.). Price plotted values for primary scientific journals and secondary indexing and abstracting journals, i.e. journals devoted exclusively to indexes and abstracts; the trends are similar, but lines of best fit show that the secondary journals have grown more rapidly. Figures of this kind are of limited value, because they take account neither of the number of articles in primary journals nor of the number of entries in secondary services. The population of primary journals appears to have increased tenfold every 50 years, and of secondary journals every 30 years. Menard (1971) adds a third curve to Price's original graph, showing that computer indexes have grown even more rapidly than the primary and secondary literatures, increasing tenfold in number every 10 years (Figure 13). In the 1956 paper Price suggested that there was one secondary journal for every 300 primary journals in science. Wood and Bower (1971) estimated that there were some 3,000 secondary services in science and technology, and Gottschalk and Desmond (1963) that there were 35,000 primary journals in science and technology - this latter figure was probably nearer to 40,000 by 1971 giving a ratio of slightly less than 1:13. Ratios of this kind, however, depend very much on the definition of primary and secondary journals.

The relative growth trends of primary and secondary journals in the social sciences are shown in Figure 14. Two estimates of the growth trend of secondary literature are available; curve (4) is based on CLOSSS, and curve (3) on the separately collected file of secondary service titles (see section 2.6). Taking 1920 as a base, the trend of both curves is remarkably similar, although curve (3) is smoothed to some extent by plotting data at 10 year intervals only. Up to about 1960 the secondary titles were growing more rapidly than primary journal titles (curve (2)) and all types of serials (curve (1)). After 1960 the curve (3), based on the larger group of secondary service titles, levels out to a trend almost identical to the primary literature; allowance should however, be made for the smoothing of the curve. If anything, the trend for primary journals indicates slightly more rapid growth than secondary titles (curve (3)). However taking the CLOSSS-based curve (4) as indicative of secondary titles growth, it appears that primary journals are growing less rapidly than the former. Taken with the impression that bibliographical control services are inadequately developed in the social sciences (see, DISISS Report A5), this comparison suggest that by the 1960s the secondary literature was barely keeping pace with the primary literature. However, simplistic quantitative comparisons are dangerous and this one in particular requires further clarification and investigation. Certainly new and specialized bibliographical services have appeared in the last 10 to 15 years, but their net effect on bibliographical control cannot be regarded as proportionate to their increase in numbers. The tentative evidence available suggests that the main improvement in bibliographical control has been through new services serving traditional or new subjects, rather than in the number of index or abstract entries listed per volume (see section 4.1(3)). The creation or proliferation of services may be an easier way of responding to the pressure for better control, than attempting to expand and improve existing services.

Taking abstracts, indexes, contents lists, book reviews and bibliographies as representing the secondary literature, the time series data (Table 50) suggests that secondary services developed fairly late in the history of the social sciences, well behind the development of a substantial periodical literature. The ratio of secondary serials to other serials and periodicals on the CLOSSS file is given in Table 67 and the production of primary and secondary services is plotted at intervals between 1880 and 1970 in Figure 14 using separately collected data. The relatively slow development of secondary literature is indicated by the positive trend of the ratio of all primary to secondary serials between 1880 and 1910. After 1910 the trend of the ratio is negative, and by 1970 for every 15 primary journals (or 20 primary serials) there is 1 secondary serial. The ratio of 15 to 1 compares favourably with that quoted for science serials by Conrad (1965) at 18 to 1 in 1950 and is quite similar to the ratio of 13 to 1 calculated from the estimates of Wood and Bower (1971) and Gottschalk and Desmond (1963) (see above), but bears no relation to the ratio of 300 to 1 suggested by Price. The fact that the secondary serials listed on CLOSSS are mainly the 'core' mission and discipline orientated ones, clearly has a bearing on the ratio, so that the value of 15 to 1 based on CLOSSS should be treated with caution. In section 2.6 it is stated that over 1,000 secondary services (mostly serials) exist of all types with some relevance to the social sciences. A general ratio of 15 to 1 could still be valid even with c. 1,000 secondary services, implying a journal population of c.14,400 which is some 4,500 more than held at the BLLD in 1973[1] and considerably fewer than the UNESCO and Ulrich estimates (Table 3). The ratio of primary serials to secondary serials on CLOSSS is 20.3 to 1 in 1970; on this basis c.1,000 secondary serials would imply a primary serial population of c. 20,000 serials - closer to the upper estimates for social science serials, and close to the Ulrich estimate for 21,600. It seems then that the ratio of secondary to primary titles in the social sciences is not very different from that in the pure and applied sciences.

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[1] A quick check has shown that the BLLD lacked a high proportion of primary titles on CLOSSS; most of them being outside the scope of the BLLD collection, i.e. most unlikely to be wanted on interlibrary loan.

The calculation of ratios is further complicated because the 1,000 or so secondary services include a proportion of primary serials which carry secondary material. Accordingly the ratios reported must be treated with caution as a preliminary estimate only.

A comparison between social science serials and monographs and all monographs is shown in Figure 15. There does not appear to be a significantly different growth trend between social science serials (curve (4)), world social science monograph production (curve (2)), and total monograph production in all subjects (curve (1)). However, social science monograph production in the top 11 countries (curve (3)) appears to have a more rapid growth trend than production of social science serials or world production of monographs in all subjects and in the social sciences only.

Another method of comparing the relative growth trends of serials and monographs is by basing the curves on an index. Figures 36 and 37 show trend curves based on index values for the UK and US production of monographs in all subjects and social science serials. In the UK the two populations show a similar growth trend, but in the USA all monographs have grown more rapidly than social science serials.

In terms of titles monographs are much more numerous than serials (roughly 32 to 1), but in terms of bibliographical units (articles) the picture is quite different, and the ratio for monographs to serial articles is much closer (roughly 2 to 3). The relationship between titles can be seen from the curves plotted in Figures 14 and 15. Using an estimate of 47 articles per year on average for social science serials (Wood and Ferguson, 1974; based on a random sample of titles from CLOSSS) a value of about 188,000 social science serial articles per year is obtained from 4,000 current serials. For comparison, in 1970 world production of social science monographs was around 130,000 titles. Although these are very rough estimates and comparisons they are nonetheless indicative . If the population of serials was larger it would contain many more low level titles, which would contain fewer articles and would necessitate the use of a lower average value of articles per year. On CLOSSS some 40% of all serials published fewer than 15 articles per year (see section 2.5.1(k) and 4.1 for further discussion and data). More refined estimates of the relative sizes of literature are required; they could be produced fairly easily and would be of use for bibliometric studies in general.

In the light of this data, the ratio of serial to monograph citations from social science sources found by DISISS (see DISISS Report A3) and by Earle and Vickery (1969a) can be compared with the ratio of citable serial and monograph items. The DISISS study gave a serial to monograph citation ratio of about 1:1.3, and Earle and Vickery's study 1:2. For comparison, in science the ratio of citations of serials to monographs varies in different studies: in science 82:18 (about 3:1), and in technology 70:30 (about 2.3:1) (Earle and Vickery, 1969b); geology 3:1 (Craig, 1969); plasma physics 67:33 (2:1) (East and Weymann, 1969); electrical engineering 62:38 (about 1.6:1) (Coile, 1969); and in science Garfield and Sher (1963) and Price (1965) quoted ratios of 84:16 and 4:1 respectively.

The estimated ratio of serial articles to monograph titles in science and technology together is about 8 to 1 at 1970, based on a projection of Vickery's estimate for annual production of articles to c.1 million and a monograph production of c.125,000 titles.

2.7.2 Comparisons between the social sciences and other subjects

In the absence of adequate data on the bibliometric characteristics of the humanities literature comparisons have to be confined mainly to science and technology.

(1) Production and size of literature

At the beginning of the 1970s the number of currently published serial titles of all types in all subjects was about 125,000; by then the total of all serial titles that had ever been published was between one quarter million and one million. The number of current scientific and technological serials was estimated in 1963 to be about 35,000 and by 1970 is probably nearer to 40,000; in addition, there are between 10,000 and 15,000 'worthwhile' serials concerned mainly with the social sciences, and possibly an equal number dealing with the humanities. A rough estimate suggests then that there are some 70,000 'worthwhile' current serial titles in all branches of knowledge, and about an equal number of less important and less widely disseminated serials, of which some are journals and others monograph series. It is worth noting that the two Ulrich bibliographies (International Periodicals Directory (15th edition), and Irregular Serials and Annuals) together contain some 85,000 current titles. On a world level Ulrich is selective, but its higher total than the one quoted above, results from inclusion of a large number of US titles of local significancies.

For many purposes the number of articles produced is a more satisfactory measure of the size and growth of literature. As an estimate the number of worthwhile articles produced in the social sciences is probably not much more than 200,000 per year, and a figure of 188.000 has been quoted above. A more cautious definition of major serials sources and types of article could reduce this estimate to about 150,000 articles per year at the beginning of the 1970s (see section 4.1(1)). The number of formal research papers is probably even fewer than 150,000, the balance being made up of a variety of news, popular and general material. In the sciences and technology the annual production of articles is at least one million. This gap in production may however narrow in the next ten years: there are indications that the growth rate of science is slackening but none that this is occurring yet in the social sciences.

For comparative purposes the following trends in the monograph literature should be noted. Between 1961 and 1970 the proportion of science and technology monographs fell from 30% to 28% of world production, whereas social science monographs increased their share from 21% to 24% in the same period (Table 73). In 1970 production of science and technology monographs was 124,000 titles as against 105,000 social science titles; however, if history and geography are added to social science the latter total is 137,000. As many as 40% of all monographs could be classified as humanities, although imaginative literature accounts for nearly half of this (21.4% of total monograph production in 1970).

(2) Growth

There does not appear to be much difference in growth rate between social science and science and technology serial titles. Both have grown exponentially at between 3% and 5% per annum. Although some individual subjects show faster growth rates these may not be sustained over a long period, and often result from rapid growth experienced by new or immature subject areas. Orr and Leeds (1964), reporting on biomedical serials, suggest that lower rates may in fact be more correct; the scope and reliability of the data series are crucial factors in growth calculations. Percentage growth rates are no more than useful generalizations when comparisons are required, and more often may themselves be strictly non-comparable. Bibliometric measurements based on standard definitions of articles and types of serial are still a long way off.

Some of the most reliable evidence for exponential growth in science has come from studies of articles produced, although many estimates are suspect because they are based on items covered by secondary services, many of which are known to have deliberately extended their coverage. The number of comparable studies in the social sciences is very few. Evidence in terms of average size of social science journals in different subjects does not suggest exponential or accelerating growth (section 4.1). Comparison of shelf occupation per year of serials and monographs in the social sciences, science and technology, and the humanities has shown a recent decline in science, stability in the humanities, and an increase in the social sciences (Wootton, 1974).

For comparison the following characteristics of the monograph literature should be noted. In general monograph production, in the top 45 and top 12 countries particularly, has tended to grow more rapidly in the social sciences than in science and technology (Working Paper no. 7, section 5.1.2, and Figures 5 to 7; this report Figures 20 to 22). A comparison of the growth trends of US and UK production (Figures 27 and 28), shows that the differences between social science and science in the UK is not great; in the USA, however, there is a marked difference between the two areas, although the social science curve may be exaggerated, due to changes in data collection criteria. From the mid-1960s US pure science monograph production was fairly stable, but showed signs of rising about 1970/1971; by then social science production had entered a period of very rapid increase. Monograph production is generally, however, a poor indicator of the relative growth of science and social science literature as a whole. Monograph production in the humanities in both the UK and USA does not appear to be growing as rapidly as in the social sciences (Figures 27 and 28).

Future trends are uncertain. There are signs that growth in science and technology literature may be levelling out, but at the moment this does not seem to be true in social science. Even if growth in research funding is reduced, the rate of literature output may still be sustained for some while after; it may also be true that funding can recover fairly quickly in response to general economic trends, and in the long run fluctuating funding levels may have little effect on the literature curve. Making general cross-disciplinary predictions is not very satisfactory, because whatever the average trend, both science and social science can show areas of rapid growth as a response to changes in interest, new discoveries and socio-economic and technological needs. Deeper understanding of future literature growth depends on more detailed investigation of small subject areas.

(3) Characteristics

Geographical, linguistic and subject differences exist in literature production and literature use. In this section the concern is with the former; differences in citation and use characteristics are discussed in DISISS Reports A1 and A3.

The concentration of literature production on the economically developed countries needs little emphasis (see section 4.11); it occurs in both science and social science. Western Europe, North America, the Soviet bloc and Japan account for 82% of all current serials (Table 20). In 1970 the top 12 monograph producers accounted for 67% of titles, and the top 45 producers 88%.

Linguistic concentration is about as great; some 50% of monograph titles are produced in English, French,German and Spanish (Rogers, 1972). It was not possible to collect similar data for language distribution of serials, although the proportions are likely to be about the same as for monographs; the CLOSSS distribution (Table 30) is not very representative of the world distribution (see sections 3.4.2 and 3.4.3 for further discussion). There is virtually no usable data to give a reliable breakdown of the comparative language distribution by subject for science and social science. In physics, chemistry, biology, medicine and engineering a survey of the journals covered by the main indexing and abstracting services shows that English, Russian, German, French and Japanese dominate usually in that ranking and the situation is very similar in the social sciences although a different ranking may prevail with Spanish and Italian relatively more important as well. Other languages seem unlikely to break the virtual monopoly of these languages. Long term prediction is difficult; Chinese will become more important internationally and politically, but English may remain as a preferred language.

Individual subjects are so diverse in their literatures that it is impossible to generalise, and dangerous to do so until many more detailed bibliometric studies are carried out. These may perhaps show more similarities than differences between science and social science in their patterns of literature evolution and communication. Differences exist nonetheless, though their effects and implications are often difficult to quantify or to incorporate in design and policy strategies.

Some characteristics of social science periodicals were listed by Lengyel (1967). Sponsoring institutions have a clear influence; most of them run at a loss; many make do with a minimum of editorial facilities, although editorial influence can be strong. An attempt to meet interdisciplinary needs is apparent, as well as a striving to reach the general reader, for which purpose 'mediating' journals are developing (Horowitz and Barker, 1974). Language barriers and parochialism in outlook are prevalent, and there is perhaps a failure to develop adequately other communication and documentation functions. Lengyel suggests that more primary journals could take on secondary functions - a view which might be now viewed as unrealistic. These debating points about the social science press have their parallel in scope and time with the debate conducted in science and technology in the 1960s (Cahn, 1965; Porter, 1964)

3.0 MONOGRAPH LITERATURE

A detailed study of the size and growth of the monograph literature in the social sciences and in other subjects was carried out during the project and reported in Working Paper no. 7 (Bath University 1974). The main findings of that study are summarized here. A microfiche copy of the working paper is presented as an enclosure with this report, a list of section headings, figures and tables is given in Appendix B.

3.1 Sources and method

3.1.1 Definitions

The data was based on the number of titles produced or reported, not the number of copies. Time series were measured annually, and 'growth' was defined as an increment in annual production of book titles.

The problem of definition of monographs was considered in some detail in section 3.1 of Working Paper no. 7. In general line with definitions set by established collections of statistics and bibliographies, 'monograph' was defined for the purpose of DISISS as any non-serial publication with the exception of technical reports. No distinction was made between 'books' (non-periodical printed publications of more than 49 pages, published and made available to the public) and 'pamphlets'. Report-type literature (such as working papers) other than technical reports in official series was considered to form part of the monograph literature, as were other government publications (except those which are confidential or designed for internal distribution only), school textbooks, university theses (when published), offprints, separate works published in a series, and works consisting for the most part of illustrated material. The UNESCO recommendation (UNESCO 1964) excludes publications intended for advertising, 'transitory' publications, e.g. timetables, price lists, programmes, reports of business firms, etc., and publications in which the text is not the most important part, e.g. music, maps and charts.

Despite efforts to promote standardized definitions, some countries follow their own variant definitions. A good example of this practice and the confusion it can cause is found in the study by Vebra (1972) of book title production in the USA and USSR. Unsatisfactory results with book titles data led Vebra to a quantitative study using the printers' sheet as a unit, in order to compute the amount of reading matter produced in the two countries (Vebra 1973). This measure can hardly be used on any scale however, so that the official figures for titles have to be used instead.

An important feature of Vebra's study was to point out that Soviet book production statistics are not strictly comparable with most Western and particularly US ones, because the definitions used for inclusion of material in official records are broader and interpreted with greater latitude; for example separate printing orders for the same book are counted as separate titles, resulting in an over-estimation error of about 4% in the production statistics. Vebra suggests that Western bibliographers have been uncritical in their use of Soviet statistics although many of her points are challenged in a critique of her study by Paton (1973). On re-examination and re-assessment of the data Vebra calculated that the USA produced a greater number of titles, and a greater quantity of printer's sheets than the USSR, although the UNESCO statistics show the USSR as producing a larger number of titles.

The inclusion or exclusion of various official publications (government publications) can have a dramatic effect on production figures. As a rough indication, inclusion of all British official publications could double the size of the British National Bibliography (BNB), which includes at present only 10% to 20% of the official publications produced.

3.1.2 Coverage

An analysis of gross statistics of monograph production does not allow for much discrimination between different types of literature. Unless analyses are carried out systematically and critically on individual bibliographies it is hardly possible to separate the 'scholarly' and academic materials from the 'popular' and general; the same applies to much of the textbook literature, official publications and other categories which may be of special interest and defined by provenance, sponsorship, function or market orientation. In Working Paper no. 7 (p.8), a distinction was made between 'functional' and 'non-functional' books in the manner suggested by Escarpit (1966)[1], but the results are unsatisfactory. Some distinction of this kind is nevertheless an extremely important one, partly because changes in size and differences between countries and subjects may be greatly affected, and partly because no true comparison can be made with serial literature unless either 'popular' monographs are excluded or 'popular' serials included. The data on serials collected for DISISS on CLOSSS and reviewed in section 2.0 largely excludes 'popular' serials, and ideally 'popular' monographs should be excluded. The 'functional/non-functional' division is of course not the same as 'academic/non-academic' division, but it does segregate a fair proportion of the non-academic books. Some of the data available on different forms is considered in section 3.5, but the treatment is not intended to be exhaustive.

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[1] "The idea of the functional book is more easily apprehended than that of the book as a thing. Some books claim to be functional and their utilitarian purpose is unequivocal. Of the ten classes recognized by the Dewey decimal classification [and implicitly of the UDC used in the UNESCO data], four are entirely functional (Social Sciences, Language, Pure Science and Technology) and five are partly so (General Works, Philosophy, Religion, The Arts and History-Geography) ... This statement, however, should be taken with some caution, as the criteria of the decimal classification system are extremely imprecise. If all books other than those in Class 8 (Literature) are taken to be more or less functional, it is possible to gain an approximate idea of the situation in each country, but it must be remembered that Class 8 sometimes includes functional books as well. In France and the Netherlands not only criticism and books on literary history, including school and university textbooks, but even works from Class 4 (Language) are usually placed in Class 8." Escarpit (1966, p.36).

3.1.3 Data collection and processing

Analyses of size and growth were based mainly upon book production statistics reported in the UN Statistical Yearbook, the UNESCO Statistical Yearbook and the Bowker Annual; and on data collected from the British National Bibliography (BNB). Thus, while most of the statistics used were secondary, for British material actual counts were made of items published. The main work involved some re-working and retabulation of data, and the calculation of subject composition percentages, annual percentage changes in production and index numbers. Analyses of time series were made and least squares regression analysis was used for rough forecasting of annual production up to 1985 where visual inspection indicated a linear trend. Non-linear trends were described by least squares regression by log (size) against time and forecasts based on the annual percentage increment.

3.2 Production of monographs

3.2.1 Total production

In 1970 some 546,000 monograph titles in all subjects were produced, according to returns from 66 countries submitted to UNESCO. Monographs of one kind or another originate from virtually all of the 169 sovereign territories enumerated in the latest UNESCO Statistical Yearbook (1972), but the bulk of the production comes from countries within the 66 that account for the 546,000 items produced in 1970. No important producer is omitted from these 66, with the exception of the People's Republic of China. The top 45 book producers (listed in Table 71) contributed 482,000 titles (88.3%) and the top 12 producers 365,000 titles (66.8%) of world production in 1970 (Table 72). The People's Republic of China, and the remaining countries which all produce less than 1,000 titles per year each, would add about another 100,000 items at the most to the 1970 total. On this estimate, about 650,000 monograph titles were produced in 1970. If this figure is increased further by including various categories of items normally omitted from the UNESCO data, about 750,000 items of all types of monograph are produced annually, and of these between one half and two thirds are likely to come from the top 12 producers.

It would be very useful to have an estimate of the production of 'higher' level books, so as to enable a valid comparison with the production of 'worthwhile' serial titles and articles (see section 2.7.1 and 2.7.2(1)). 'Functional' books account for about 80% of all production, but even within this category there is a substantial quantity of commercial, popular, local, ephemeral and trivial material, which ought to be excluded from an estimate of the production of 'higher' level titles. In 1970 world production of functional titles was 451,000, for the top 45 producers 389,000 and for the top 12 producers 297,000. Further detailed research is required into this aspect of the composition of the monograph population. To hazard a guess perhaps half the production of functional books is non-academic or popular, etc., but the proportion will obviously vary between subjects and in different countries.

3.2.2 Production of social science monographs

The data on monograph production in the UNESCO Statistical Yearbook is classified by UDC into ten subjects (Tables 73 to 75). The social sciences are designàted as class 3, but relevant material is also found in class 1 (philosophy and psychology), class 4 (linguistics), class 7 (including planning, architecture, recreation and leisure) and class 9 (history and geography)[1]. Some titles listed in the statistics are not classified. In 1970 some 105,000 items in class 3 were produced, representing between 25% (classified titles) and 20% (all titles) of total production. The totals for the top 45 producers (Table 74) and the top 12 producers (Table 75) were 102,000 and 77,000 respectively. Each of these totals represents a likely minimum of materials produced by or for social scientists; taking into account materials of relevance to the social sciences, the annual total will be a good deal higher, perhaps by as much as 50%. However, this additional material will be shared with other subject areas, and if all subject areas were held to include material of possible relevance, there would be massive overlap.

Depending on the definitions of subject areas, the social sciences appear to produce more monographs than the applied sciences or pure sciences separately, but fewer than all sciences together; more than imaginative literature, and fewer than all the humanities together. Within the top 12 countries, however the social sciences (class 3 and class 9) produced some 9,000 titles (10.1%) more than the pure and applied sciences together in 1970.

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[1] The other classes are: 0 (generalities); 2 (religion); 5 (pure sciences); 6 (applied sciences); 9 (literature).

3.2.3 Production of monograph literature within the social sciences

Since 1964 UNESCO has published a series of detailed book production statistics, breaking down total book production into 23 subject classes, as against 10 subject classes in the original series; both series have been published subsequently.

Ten of the subject classes cover the social sciences, although these include two classes dealing with geography and history/biography, together roughly equivalent to class 9 of the 10-division classification. The eight other classes represent class 3 in the 10-division classification, with some small additions from class 1 (philosophy/psychology) and class 4 (linguistics and philology).

The 'new' (23-division) classification makes possible some rough measure of the distribution of book title production within the social sciences. Data was analysed for 11 major producing countries: no data was available for the Netherlands, although that country comes within the top 12 considered in the previous section.

The subject distribution is given in Table 76. In 1970, of 105,000 titles, 28.6% were classed as politics and economics, 15.6% as education, 14.5% as biography and history and 9% as commerce. Twice as many titles in education, and four times as many in politics and economics, were produced as in sociology.

3.3 Growth of monograph production

3.3.1 Overall growth

Book production for all countries (taking data from between 51 and 73 countries), the top 45 and the top 12 producers is plotted in Figures

16 and 17. It appears from the data for 1960/61 - 1970 that monograph production is growing linearly; the same trend appears when world book production from 1951 to 1970 is plotted (Figure 18). There was no evidence of general exponential growth when the same data was plotted on a semi-logarithmic scale. There is some evidence to suggest that the rate of growth of 'functional' books has been slightly more rapid than all books, for the top 45 and top 12 producers, on the basis of the overall percentage change in annual production at 1970 compared with 1960. Barker and Escarpit (1973) estimate that the annual growth rate of monograph titles production for the whole world is about 4% and that the growth rate for copies produced is about 6%, thus following the usual assumption of exponential growth.

Data on book production before the 1950s is not available in sufficient quantity, nor is it of adequate reliability to give a good time series. However, on the evidence available (UNESCO, n.d.), production fell during the Second World War period from the level reached in the late 1930s. There has been a marked acceleration of book title production since the 1950s, but the growth has not been exponential. There has been some variability in annual production, but on the whole linear regression lines fit the data reasonably well - enough to say with some conviction that there is a definite linear trend. Overall, the distribution, from the early years of the present century, approximates best to an oblique J-shaped curve. On the 1951-1970 time series the semi-logarithmic plot produced a relatively straight line between 1957 and 1970.

Growth of monograph production within different countries ought to be investigated before trends can be stated with any certainty. The main difficulty in doing so at present is the lack of good time series. Some 10 year series are reported in Working Paper no. 7 (section 5.1.3), but in general show a linear trend. Within countries there is some evidence that growth trends vary between subjects; in comparing the US and UK monograph production this was apparent (sections 5.3.3., 5.4.3., and 5.5.3). Apparently non-linear trends on short time series may on a longer series be part of a linear trend, perhaps subject to variability over a short period. These problems of interpretation were met in analysing serial literature growth curves, and have been discussed theoretically by Price, 1956, 1963) and Rose (1971) who were concerned with the levelling out and saturation of exponential growth curves. The data available is usually too poor either to confirm the past behaviour of a curve or to predict its future behaviour. It is fortunate that one substantial time series is available, for US book production from 1880-1969 (Hokkanen 1971). The data is plotted in Figure 19. Until 1960 the trend was linear, but then there is a more rapid non-linear growth; the great increase in production after 1960 may be due to better recording of production and changes in inclusion criteria, however.

Relating these findings to the various models of growth discussed in section 1.3, there is evidence over a 70-year period for more rapid growth in the last 20 years; but, as stated above, the curve produced is not exponential.

The plot for world monograph production (Figure 18) shows a fairly regular linear trend, which by 1970 did not show any definite levelling-off. There is no evidence yet to suggest that saturation and a slowing down of the rate of increase are imminent, but recent factors may change the situation. Threatened paper shortages have not yet had time to make much impact, except on prices; they are almost certain to affect publication in some way, though they may possibly reduce the number of copies per run rather than the number of titles published. On the other hand new printing technologies have made shorter per-copy runs economically viable, and may even encourage more titles to appear. A possible future pattern is of large printings of a smaller number of books, combined with a larger number of titles in microform, reduced print, or full-size copies individually produced from a master. Prediction and projections are dealt with in section 3.5, but the raw statistics need to be read in conjunction with informed speculations on likely socio-cultural and economic influences on book title production (section 4.11). With a few exceptions projections are based on linear trends, but the effects of future influences are uncertain. On balance a very rapid increase in production appears very unlikely as does any sharp reduction in publication of titles.

There has been a tendency to regard the general phenomenon of 'literature growth' as exponential, a view supported by analysis of serial titles, abstracts and articles; the monograph literature in general provides a contrast. However, the linear growth of monograph production is unlikely to provide much relief in the future to producers of information services, who have serials as a bulk of their input, and whose coverage of monograph literature is often minimal. Whether or not monograph production continues to expand it may still be desirable for services to increase their coverage. There are great differences between subjects; these are discussed in section 3.3.3.

3.3.2 Growth of social science monograph production

Figure 20 shows the social science book title production for 1961-1970 based on UDC class 3, and on class 3 and class 9 together. Fairly steady linear growth appears as the main trend; the rapid acceleration after 1963 was shortlived, but after 1968 production shows signs of increasing exponentially. Taking class 3 and class 9 together produces a similar trend. Similar trends are found for the top 45 (Figure 21) and top 12 producers (Figure 22).

Compared with the social sciences, the pure and applied sciences and the humanities show slower growth, (Figures 23 and 24).

In Figure 25 various data on social science book production is plotted. Estimates of production of the top 12 are based on the 'old' data (UDC classes 3 and 9) and the UNESCO 'new' classification data for 1965-1970. The plots all show an accelerating trend.

3.3.3 Growth of monograph production within the social sciences

Estimates of growth of subjects within the social sciences were based on the data from the top 11/12 producers (Figure 26). There appear to be two patterns. Monographs in philosophy and psychology (class 2), sociology and statistics (class 4), and trade and commerce (class 9/18) show linear growth between 1965 and 1970. Education (class 8), geography and history (class 22/23), and politics and economics (class 5) each show non-linear growth. It was possible to fit exponential curves to the data for all these subjects. Although politics and economics were growing at about the same rate as geography and history combined, in 1969 their rate of growth increased. Sociology and statistics, and philosophy and psychology on the whole appear to be growing less rapidly than politics/economics and education titles.

The social sciences as a whole, and constituent classes within them, appear to be growing steadily; in some cases the growth is quite spectacular.

3.4 Characteristics of monographs

3.4.1 Geographical distribution of production

Book producing countries are ranked by output in Table 71 , with the situation in 1969 and 1962 given for comparison. The ranking of the top 10 has varied little in the decade. It is instructive to compare monograph production rankings with those for serials, in Tables 30 and 31 . Excluding China, the USA, UK, France and Federal Germany all come within the top 5 for serials and monographs. The lower ranking of the USSR for serials probably reflects differences due to data collection. Japan, India and the Netherlands are substantial producers of both monographs and serials. The distribution reflects very strongly the concentration of educational and research resources on Western and Eastern Europe, North America and the USSR, Japan and India.

The production characteristics of the main producers are discussed in Working Paper no. 7, sections 5.1.3 and 5.2.4. Some quite significant contrasts are apparent. The USSR production of monographs has tended to remain stable; in India annual production shows considerable variability. In most of the countries monograph production is growing considerably although linearly; short lived bursts of more rapid growth occur occasionally, tending towards the exponential pattern, although in Federal Germany this pattern has recently been more consistent.

Geographical differences at the subject level can be studied by using the UNESCO 'new' data from 1965 onwards (see Tables 69 to 79 of Working Paper no. 7). Political science and economics together is usually the most productive subject in the 11 countries studied, except in Federal Germany where more works are classified as education than as political science. The USSR apparently produces three times as many works on political science and economics as the USA, but this is likely to reflect differences in the type of material considered. Production figures of the USA, UK and Federal Germany are probably more comparable; they appear to produce a similar quantity of political science and economics literature - 3121, 2602, and 3551 items respectively in 1970.

3.4.2 Language distribution

Statistics of monograph production arranged by language of publication do not exist except in the case of translations[1]. A working estimate of the numbers of non-English works published can be obtained by subtracting the numbers of British and other English-language books from world production. This calculation was reported by Barr (1972) who estimates that c.250,000 (out of 285,000 total) non-English-language books were published in 1955, and c.382,000 (out of 478,000) in 1967. The estimated figure for 1970 is c. 426,000 (out of 546,000 total world production).

A close relationship between country of publication and language of publication cannot be taken for granted. Barr's estimates do not take account of English-language publishing in continental Europe, India, Japan and various African countries; and Canada produces a substantial amount of French-language material The figure of 426,000 for non-English language in 1970 may be an overestimate by 10% or even 20%.

Some other estimates have been reported by Rogers (1972); about 50% of all titles produced are in English, French, German and Spanish, and some 15% of titles are published in minority written languages. A crude estimate is that English language books from the UK, USA, Canada, Australia and New Zealand accounted for not less than 14% of world production in 1970.

The relationship between the main spoken languages and the main literary languages is not direct. Arabic, Chinese and the main vernacular languages of India and South East Asia do not yet sustain academic literatures remotely related to their importance as spoken languages. English and French, and to a very much lesser degree Russian and German, are the scientific languages of these areas; although many publishers (particularly French and British) take an interest in development of written materials in the vernacular languages. The position in Central and South America is rather different, because the Spanish and Portuguese languages have brought a measure of literary homogeneity to the countries in the area. Spanish appears as a fairly strongly represented language in the social sciences

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[1] The tables produced in the UNESCO Statistical Yearbook (1972) deal with: (i) translations published in 1968-70 by country of publication; (ii) translations published in 1968-70 by original language; (iii) translations from languages most frequently translated by country of publication 1968-70.

Rogers' conclusions on language distribution appear to be correct, but to his four main languages one must now add Russian, Japanese and Chinese as important literary languages. It is now very unlikely that scientific communication will ever become the exclusive preserve of English, although English will remain very important as a language of science. The recent moves in the United Nations towards creating additional official languages may lead to the development of more linguistic foci for the social sciences, as 'respectability' is conferred on various languages.

The distribution and relative importance of various literary scripts has been studied by Wellisch (1974). The world's scripts were ranked according to their relative importance in terms of the number of adult literates using a script and the number of books published in each. The six most important scripts by number of literates (including those literate in more than one script) were identified as Roman (67% of all literates), Chinese (21%), Cyrillic (16%), Devanagari (7%) (the basis of many Indian scripts), Japanese (5%) and Arabic (12%). Grouped by book title production the order of the top 6 were Roman (70.9% of all titles), Cyrillic (15.8%), Japanese (5.9%), Devanagari (2.3%), Arabic (1.7%) and Chinese (0.9%).

From the available evidence language problems are likely to remain, although the amount of monograph literature requiring translation is not likely to be large, either in social or pure and applied sciences. There will be a continued need to develop ways of handling foreign language materials in information services. It is difficult to predict how far languages other than the main literary ones will become important for communication, secondary reporting and information gathering, especially with the anticipated development of the social sciences in the developing countries.

3.4.3 Translations

The statistical documentation of translations is relatively comprehensive compared with that of the language distribution of titles. According to the UNESCO Statistical Yearbook, in 1970 some 40,000 translations in all languages and in all subjects were published, of which 5,000 were classified as social science; nearly half the translations published were classified as imaginative literature. The pure and applied sciences accounted for about 6,000 translations (Table 77). In 1970 translations accounted for 7.3% of world monograph production. In 1960, Escarpit (1966) estimated the proportion at 10%; Escarpit based his figures on data from 44 countries, whereas the 1970 data refers to 76 countries. Statistically, the growth in translated titles is not keeping pace with the growth of production of vernacular texts, although much of the latter growth involves works which are never likely to require translation. The number of original works translated is much less than the number of translations made. Up to 5% of all translations produced are of literary classics.

An estimate of the growth in the number of translations of scientific and technical reports and articles published in serials is provided by the Commonwealth Index of Unpublished Scientific Translations; this is the central index to English translations of scientific and technical literature. The index was founded in 1951 and in 1970 contained 230,000 entries. Until 1958 growth was modest, but more rapidly thereafter to 1964 when it slackened off (Figure 29). The index contains a small but growing number of entries dealing with economics and the social sciences in general (Line, 1971).

The distribution of translations by original languages is shown in Table 78. The 10 most translated languages account for 85% of translations. English is clearly the most translated language. Languages which have a large book production but which are infrequently translated to any other language include Polish, Dutch, Japanese and Chinese.

The low figures recorded for works translated into and from many languages do not necessarily mean that many significant works remain untranslated - works of major importance are often quite rapidly translated. The world's most frequently translated authors include, as well as obvious writers such as Freud, Jung, Marx, Lenin and Engels, modern writers like J.K. Galbraith. However, the great bulk of current social science writing remains untranslated, or is translated only some years after first publication when its reputation has been established. It is doubtful whether the present amount of translating, either of monographs or serials (see section 4.6), does much to overcome the language barrier. In some fields at least no social scientists aiming to cover the literature conscientiously could afford to rely on published translations alone.

An indication of the distribution (in terms of language of origin and country publishing the translation) of translations is given in Table 79 for the main countries publishing translations. In 1970 Federal Germany produced the most translations (5907), followed by the USSR (3117), Spain (2936), and the USA (2576); the UK is well down the list. Data for 1962 is given as a comparison; the number of translations produced in the USSR fell from 4859 in 1962 to 3117 in 1969. The fall in activity may be due to a contraction in the large domestic programme of translating from Russian into the other languages of the Soviet Union. The USSR itself is a major source of translation from Russian into other languages.

Because English is still the commonest language of scholarly communication the low level of translation activity in the UK is not surprising, but in 8 years the amount of materials translated in the USA doubled, with significant increases in translations from all main languages, especially German and Russian.

It is impossible to give some details about the social sciences in either Table 79 or in the other tables, but specific subject information would be interesting and useful if it could be gathered. One danger of interpreting the data as it exists at present is that an unknown bias will occur due to the large amount of imaginative literature translated every year. As a working rule the average proportion of fiction translated is about 50%, and social science (class 3) about 10%; unclassified data should be interpreted with such proportions in mind.

3.4.4 Publication patterns

(a) Origin

No data comparable with that on types of issuing body collected for serials on CLOSSS is available for monographs. With the main exception of the USSR and Eastern Europe, traditional commercial publishing houses are responsible for the bulk of monograph production in terms of titles, copies and value of production. In the commercial sector there is specialization; university press publishers are important in the UK and USA, and are responsible for much social science material. State publishing houses are dominant in the USSR and Eastern Europe, whilst elsewhere (and particularly in Europe and North America) government sponsorship of publications (official publication) has grown in the social sciences; government presses are responsible for publication of manuals and handbooks, as well as official reports proper, legislation, statistics and commercial material. In the social sciences a growing part of the monograph literature originates as report literature (other than in official technical report series); much of it is in near-print form, for example working papers of projects, and reports and publications of official and semi-public bodies (Fletcher, 1973). There is also a growing evidence for a wide range of local and ephemeral, often semi- or un- published, material to be considered relevant.

(b) Paperbacks

The earliest cheap paperback books had appeared by the beginning of the century. The mass market paperback edition belongs essentially to the post-1945 period, and has contributed significantly to the growth of literature in terms of titles and copies produced. The number of works published only in paperback has steadily increased, and it is very likely that some of the rapid increase in social science production is due to publication of paperbacks. Paperback production, coupled with the introduction of new printing technologies has led to significant changes in the structure and economics of publishing; further technical and commercial innovations in this area, particularly affecting the textbook market are likely. There have been effects on hardback publishing, but perhaps not as serious as once thought likely. The main effect of paperback publishing has been to help widen and increase the market for books, resulting in greater production and sustained growth.

(c) Textbooks

Textbooks and schoolbooks form an important category of the monograph literature for certain groups of users. At the secondary educational level they provide texts outlining the substance of a subject and at the same time can provide an overview for users within the given subject or in another field. A number of bibliometric studies have been carried out to investigate the nature and quality of textbooks (Levine, Worboys and Taylor (1973) and Nixon (1974) in psychology; Hobbs (1951), Odum (1951), Bain (1962) and Oromaner (1968) in sociology), but there have been no major studies reported in the literature which attempt to assess the size, growth and subject distribution of textbooks. Studies of size, growth and characteristics would require concise definition of the type of material under study and there would be the usual difficulties involved in locating subject boundaries; for such reasons it has not been possible even to provide a rough estimate of the proportion of the literature accounted for by textbooks. Nixon (1974) listed 22 textbooks in the field of developmental psychology published since 1960 and Levine et al. examined Psychological Index and Psychological Abstracts for the period 1894-1970 and found 277 introductory texts published in English. Excluding elementary school textbooks, the number of textbooks published at the higher level is probably less than 5% of all monographs and social science monographs.

(d) Readings and collections

A 'reader' is a collection of articles which have been previously published, usually in primary journals. Books of readings are intended to supplement the basic student textbooks and to gather together material which is not readily accessible to many users. Like the textbook, the reader is an attempt to 'repackage' literature to suit defined needs, usually of students in higher education. Data on the growth in numbers of collections and readers was gathered from social science monographs listed in BNB (Dewey classes 150-159; 300-339; 400-419; 658). In 1950 collections and readers represented 0.7% (11) of all items; in 1955, 1.6% (36), in 1960, 1.1% (34) and in 1965, 3.3% (126), (Working Paper no. 7, Appendix C, Table 1). The rapid increase between 1960 and 1965 is particularly noticeable.

(e) Trends in publishing

It would be inappropriate in this report to attempt to review the very large literature dealing with the structure and distribution of book publishing; reviews of general interest are provided by Barker (1958), Escarpit (1966), Taubert (1972), Barker and Escarpit (1973), Altbach (1974) and in the Bowker Annual. Publishing forms only one part of the media available for communication, so that a full analysis of current trends would have to deal with a very wide range of related topics (e.g. the press, television, etc.). Serial and monograph publishing both have their own techniques and problems; also there are the differences and effects of the concentration of publishing activity in the developed countries and its relative absence in the developing countries of the third world, (Altbach, 1974; Bengolea and Akiwowo, 1974). The continued growth of the majority of literatures is mainly a reflection of population growth and increasing educational standards. At present, the future situation looks uncertain because of inflation, paper shortages and financial recession, particularly for the smaller producers and those who concentrate on scholarly and academic publishing. In the recent past some rationalization of publishing houses has taken place in the North American and European market and restructuring is likely to continue.

3.5 Projections

Projection of trends is at best an uncertain procedure. Unless there is a long and consistent trend, with few significant variations, forecasts cannot be made for even a few years ahead with any confidence. When, as is often the case, the trend changes (i.e. the slope of the curve alters), quite different projections can be produced by using different starting points. The best that can be achieved is the extrapolation of recent trends, based on interpretation of the available data and allied to an intuitive sense about the point at which the projection ceases to be sensible.

An important consideration is the nature of the growth. It is usually very difficult to distinguish linear and exponential growth in short time series. So far as they go the results of this study of monographs would seem to counteract the tendency common in information science to regard all growth as 'explosive' and certainly non-linear. Most of the data reported does not support such a generalization.

The projections made here should therefore be read with great caution. In most cases the projections are based on extrapolation of the best-fit linear trend line from 1970, and estimates are given for production in 1975, 1980 and 1985. In most cases 10 or 11 points have been available for the regression, in a few cases up to 20 points, and in a few others only 6 points. The paucity of points in the time series is often compensated for to some extent by the fact that wild fluctuations do not occur frequently in the main subject series.

3.5.1 World monograph production

The projections for the world monograph production are summarized in the first three sections of Table 80. The projections are based on extrapolation of best-fit linear regressions to the various data series. Two projections are given for total book production. On a twenty-year series, annual production is expected to rise from 546,000 in 1970 to 620,000 in 1975 and then to 800,000 in 1985; on an eleven-year series, production in 1975 will be around 610,000 titles rising to 790,000 titles per year in 1985. Projections for the top 45 and top 12 producers are given, as well as for 'functional' and 'non-functional' books (see footnote on p.76 for definition of types). The top 12 producers will be publishing, according to the projection, 470,000 'functional' titles (that is excluding literature and imaginative works) by 1985, compared with an expected 350,000 in 1975. Comparable projections for 'functional' titles for the top 45 producers are 460,000 in 1975, and 620,000 by 1985, and for all producers 520,000 in 1975 and 680,000 in 1985.

Barr (1972a) using the same data series, estimated that in 1980 between 649,000 titles (lower limit) and 707,000 titles (upper limit) would be produced. On the upper range of estimates the language breakdown would be 79.4% in languages other than English, 6.6% and 11.3% in English produced in the UK and USA respectively, and 2.8% in English produced elsewhere.

3.5.2 Social science monograph production

Projections for annual production of social science monographs are given in the fourth section of Table 80. Taking class 3 alone, which represents the core of social science monographs, the annual production in 1970 of 105,000 titles is expected to reach 116,000 in 1975 and 150,000 in 1985. In 1970 about 75% of social science monographs (class 3) were produced by the top 12 countries; their annual production is expected to rise from 77,000 titles to 118,000 titles in 1985. Data is also given for the top 45 producers and for the social sciences expanded to include historical and geographical literature (non-social science compensating roughly for excluded items in psychology (class 1) and linguistics (class 4)).

3.5.3 Subjects within the social sciences

Projections of monograph production for subjects within the social sciences are given in Table 81 based on data gathered for the production of the top 11 countries. The time series used is exceptionally short, but no other data was available. Extrapolation of the best-fit linear regression for six subject groups is given. On the present trend the annual production of monographs in these subject groups will double in 15 years between 1970 and 1985. Within the subject groups there will be variations and some subjects are likely to grow more rapidly. From present knowledge the areas of exceptional growth cannot be identified, and they may cut across the subject boundaries given here. For instance, environmental issues are generating a substantial literature which cuts across politics, sociology, geography, economics and ecology. Extremely detailed and complex analyses would be necessary to identify cross-disciplinary growth areas, which may be quite small at present. It would be useful to identify them for the purpose of future information system design.

In three subjects (politics/economics; education; geography/history) the data appear to fit quite well to a non-linear trend; exponential regression coefficients were calculated, and projections based on these predict astonishingly large increases in these literatures - a trebling, or even greater increases, in annual production between 1970 and 1985.

Whatever the projected trend this exponential growth seems intuitively to be most unlikely, but linear extrapolation may be about right. The best estimate may be that the annual production will fall somewhere between the two values, with a tendency to fall to the lower end of the range.

3.5.4 Projections for the main producing countries

A summary of projections is given in Table 82 for the top 6 producing countries (1969/1970) - USSR, USA, Federal Republic of Germany, UK, Japan and France. It is worth noting that in 1974 UK monograph production was lower than in any year since 1968.

3.6 Comparison of social science monograph production with other subjects

In 1970 25% of world monograph production was classed as social science (class 3); the proportion for the top 45 producers was 23.6%, and for the top 12, 24.4%. Because some social science material occurs in other classes (especially linguistics, (class 4) and history and geography (class 9)) up to another 10% could be added to each of the above amounts. Science and technology monographs account together for about 30% of production. Thus the monograph production of all the natural sciences is roughly the same size as that of the social sciences. According to the UNESCO classification, if modern imaginative literature is excluded, non-fiction humanities literature is about 20% of world production. No further analysis within subjects is possible on this data although a much more detailed count was made of UK monographs from 1950 to 1970 and a comparison made with US production (Working Paper no. 7, sections 5.3 to 5.5); the more detailed subject breakdown of this UK and US data may be fairly typical of monograph production in European countries and certain other major producers (with the exception of the USSR and perhaps the majority of East European countries).

The data in Tables 73 to 75 is at best indicative of the relationship between the main subjects in the world, and in the top 45 and the top 12 countries. Comparative data on the main subjects in the top 12 countries is given in Table 83 for 1960 and 1969, Table 84, and for the social sciences in Table 85. More detailed data is presented in Tables 69 to 79 of Working Paper no. 7. The proportion of social science monographs

(Table 86) can vary on average between 15% (France) and over 30% (India and Yugoslavia). In Federal Germany, for instance, 30.3% of monographs produced in 1970 were social science (class 3) compared with 15.6% in pure and applied science (Table 71, Working Paper no. 7); whereas in the UK the proportions were 18% and 24.8% respectively (Table 72, Working Paper no. 7). Small differences between countries may be due partly to different categorization, but differences on this scale suggest underlying factors of greater interest and importance, related to educational, social, economic and political factors. It is beyond the scope of the present study to speculate about this.

The main disadvantage of the data is that it is very coarse and does not distinguish between popular and scholarly works. More studies at this level of detail could be undertaken relatively easily and would make the data much more useful (see sections 3.2.1 and 3.3.1 above for estimates based on present knowledge).

The differences in growth between the social sciences and other subjects can be gauged from Table 80, but because an exponential curve can be fitted to the data in only a few cases, it is impossible to discuss differences as percentage growth rates, although it is possible to discuss growth rates in titles per year. It is also difficult to generalize and state that social science monograph production is growing more rapidly than that of other disciplines. The predictions for social science subjects in Table 81 based on exponential curves appear very unreal, e.g. a five-fold increase in 15 years, between 1970 and 1985. To sum up, social sciences monograph production is growing more rapidly than the pure and applied sciences, and probably more rapidly than the humanities (excluding fiction).

3.7 Summary and trends

The main point to emerge from the analysis is that the exponential growth model is not generally applicable to monograph production, with the exception of a few subjects (mostly in the social sciences) and a few countries (USA, Federal Germany Spain), at any rate over recent years. If longer time series were available, such as the one analysed by Hokkanen for the USA, the overall shape of the monograph growth curve might prove to be non-linear. Where an exponential curve does give a good fit over a long time series with low variability, the percentage growth rate is usually quite small - for instance, 2.5% per annum for US monographs 1880-1969 (Hokkanen 1971), despite the fact that for 1954-1971 an annual growth rate of 7.8% was calculated for the same data (Working Paper no. 7, Table 109). This is a good illustration of the difficulty of interpreting monograph production time series. It is not easy to say which of several estimates is the most accurate predictor; if more were known about the factors affecting literature growth (such as number of authors and researchers, level of research funds, and the size and capacity of the publishing sector in the economy) a better understanding of the different estimates might be obtained to guide future planning decisions.

In the long term any non-linear and exponential trends are unlikely to be maintained at the projected level. In this case, the main practical research task is to monitor the factors which could lead to saturation of growth and a resumption of linear trends, or even to gradually declining production. To forecast which of these is likely to occur would be useful to forward planning, but it requires a much deeper knowledge of the generation and production of information than is available now.

However, it is necessary to see these results in the context of all recorded knowledge. The production of documents of all kinds is unlikely to decelerate, and a relatively slow growth rate of monographs may be compensated for by continued or accelerated growth of other forms - not merely serials, reports and other published or semi-published printed or written documents, but non-print media of various kinds. Printed documents as a whole have up to now shown fairly clearly non-linear and exponential trends (see section 1.3), but all recorded knowledge is presumably likely to reach saturation in due course. Monographs seem at present to be gradually 'losing' to other forms, and it is interesting to speculate why. There are several possible explanations, all of which may contribute. Many monographs are of a semi-popular or popular nature, and non-print media may be taking their place as a means of recreation - it may be noted that in the UK public library issues have recently declined, and illiteracy appears to be growing in the UK. Researchers tend to prefer the quickly written, rapidly published papers reporting their findings, and so contribute mainly to serials; more extensive papers may be produced as reports, particularly if their audience is limited. Extensive academic monographs unless they have a certain substantial market, may be victims of the economic problems facing publishers. On the other hand, student textbooks appear to be thriving, as do 'egghead paperbacks' intended for the intelligent general reader. And, as noted earlier, the exponential growth of serial titles may conceal an actual linear growth over the last 2 or 3 years, since individual serials appear on average to be shrinking.

4.0 OTHER ESTIMATES OF SIZE, GROWTH AND CHARACTERISTICS

The first section in this chapter supplements and expands the discussion of bibliometric characteristics based on the literatures of serial and monograph titles in the preceding chapters. The remainder of the chapter is a discussion of the bibliometric characteristics of other types of literature and information resources. Accurate bibliometric data on these other literatures and information resources is fairly limited, and they would repay further study. Interest in these areas is however growing; there have been recent efforts to collect basic information on mechanized information services and data bases (Kruzas, 1971; Sessions, 1972; Schneider, Gechman and Furth, 1973). Data and survey archives are already fairly well documented in the literature (Bisco, 1967; Nasatir, 1973). Primary research material in the social sciences has been considered in a report by Pemberton (1972). The relationship of literature production and growth to socio-economic activity is considered briefly in section 4.11.

4.1 Size, production and growth of articles, abstracts and pages

The number of titles published is, as already pointed out, a convenient measure of size, production and growth of literature, but neither the only one nor the best, particularly for serials, which may change dramatically in individual and average size over time. Articles are preferable as a measure of the development of science, because they are a better indicator of the absolute quantity of scientific information produced. Librarians require measurements based on shelf space occupation, and also measures of cost (not only purchase costs, but processing, binding, accounting and storage costs). Pages are a reasonable indicator of physical bulk. The number of volumes and issues per year affects binding and processing costs, but is not otherwise a useful measure.

(1) Articles

There are some useful studies reported in the literature which provide supplementary estimates of literature size and growth; in addition a small amount of data has been collected by DISISS.

The major practical problem is one of measurement. Direct counts are time consuming and can usually only be done on a sample basis; indirect estimates based on the number of journals and the average number of articles produced per year can give a rough and quick estimate, but are subject to considerable margins of error and may require the definition of relevant and non-relevant categories of materials. The number of abstracts is often used to give an estimate, but is a very poor substitute, affected as it is by changing coverage of secondary services. In most cases estimates of size and production in various subjects have been established by multiplying the number of relevant journal titles by an average value for number of articles (or pages or words) per year.

The number of articles varies considerably between journals and subjects, and over time; several studies are mentioned in section (4) below. In some subjects growth appears to result in the appearance of new journals, rather than the continued expansion of existing journals. This may be true of the social sciences, where ideological factors or 'schools of thought' may favour the creation of new journals with a different slant and where economic factors may be against the great increases in cost of individual journals that result from continued growth. In science an increase in the number of titles seems to be paralleled by rapid growth of at least some individual journals - one biochemical journal now produces 26 volumes per year, an amount unlikely in the social sciences, or indeed in technology. Without detailed data it is impossible to generalize about the growth in articles and relative growth of articles and titles.

Lack of agreement on the number of relevant serials in various subjects has hindered the production of accurate estimates. Surveys by Bourne (1962), Carter (1967) and Vickery (1968) of annual production of articles are the main sources; none of these deals with the social sciences (or humanities), nor attempts any formal growth calculations. Bourne has provided the most detailed survey and attempted a subject breakdown in the main fields of science and technology, relying on Gottschalk and Desmond (1963) for data on the serial literature and estimates from the National Library of Medicine and Biological Abstracts for the average number of articles per journal (various averages of between 30 to 70 per year were used). The world production at about 1960 was estimated at between 1 and 2 million articles per year, with a range (derived from other sources) of between 0.8 and 3.5 million articles per year. Carter, covering a narrower field of science and technology than either Bourne or Vickery, calculated the world production at 0.95 million articles per year. Vickery, using sample data from the BLLD, estimated that 26,000 current scientific and technical serials yield about 0.85 million authored articles per year. Vickery (1973) suggests that the doubling period for the number of scientific papers is about 20 years, and that the cumulated number of papers ever published in science, technology, and medicine is about 30 million.

With widely varying estimates of annual production of articles the calculation of a reasonably accurate growth rate is difficult. It would be hazardous to estimate the number of articles produced in science and technology in 1974; by then the BLLD received some 37,000 current serials in all subjects, of which as many as 8,000 to 10,000 could be humanities and social science. On a rough estimate, the average number of articles in journals has grown perhaps by 10% to 20% since c.1967, but the number of primary journals in science and technology at BLLD is probably still less than 30,000. Vickery's estimate for 1967 could be tentatively raised to over 1 million per year for science and technology in 1974. There is evidence to show that the growth in numbers of articles in certain science journals has been rapid (Biochemica et Biophysica Acta, 1966) - more rapid than the increase in number of titles, at least until the late 1960s.

There have been no comprehensive studies of the numbers of articles produced per year in the social sciences and sub-fields. The numbers of abstracts published per year in some of the main secondary services give a rough estimate, but are probably well short of the total number of relevant items (see section 4.1(3) below and Table 90) and may include some entries from monographs.

The best estimate of the total number of articles relevant to the social sciences currently produced has at present to be based on the number of current journals and the average number of articles appearing in each year. Taking the average number of articles per year published in social science journals listed on CLOSSS[1] as 37, the following estimates are obtained; based on WLOSSP (2,662 titles), 98,500; on CLOSSS (3,273 titles), 121,100; on BLLD (c.10,000 titles), 370,000; on Ulrich (15th edition; 21,600 titles), 799,200; and on the UNESCO Statistical Yearbook (c.27,000 titles), 999,000. The estimates based on Ulrich and the UNESCO Statistical Yearbook have little credibility; many of the serials listed therein are of a very minor nature, of local interest, contain few articles, or publish material of doubtful relevance to the social sciences. As a tentative conclusion, the number of 'worthwhile' articles produced per year in social science journals probably does not exceed 200,000; this is only a fourth of fifth the number given by conservative estimates for worldwide annual production of scientific and technical articles. The growth rate for production of articles cannot be calculated accurately by multiplying the numbers of serial titles in selected years by the average number of articles, because the latter is liable to have changed over time (see section (4) below). A rough idea of the growth rate could be gained from examining past coverage of secondary services, but, as noted this is an unreliable method because of variations in coverage patterns and policies.

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[1] The average number of articles per year produced by journals listed on CLOSSS should provide a more accurate estimate for general use, than one based on the sample of journals used to calculate a growth correction factor, which would be biased towards academic journals (see DISISS Report A3, section 4.2). An average value of 37 articles per year was obtained for titles currently published on CLOSSS (1970) by using the data in Table 38; midpoint class values for articles per year were multiplied by the number of titles in each class, the article totals summed, and divided by the total number of current titles. For titles with 100 or more articles per year a midpoint class value of 150 was used. The average value of 37 articles per year based on the whole file should be compared with the value of 47 articles per year obtained by Wood and Ferguson (1974) using a sample of 89 titles taken at random from CLOSSS.

Orr and Leeds (1964) quote a growth rate for biomedical papers based on data gathered for two points in time (Billings, 1881; Brodman and Taine, 1959); the number of papers grew tenfold in 78 years (1879-1957). In a sample of 61 US biomedical research journals, Shilling (1962) recorded a 31% increase in papers published in ten years (1950-1960). Biomedical sub-fields provide examples of rapid growth in different periods; the literature of cardiovascular agents grew rapidly from 1930 to 1950, then levelled off, whilst that on poliomyelitis showed accelerating growth from 1946 to 1954, when it stabilized and declined to 1962 (quoted by Orr and Leeds, 1964). May (1966) obtained a good fit to an exponential curve for cumulative annual totals of mathematical papers (1867-1965), using estimates for pre-1867 literature. The non-cumulative data reveals two lows in production for the World Wars, which resulted in linear growth trends in the two post-war periods; over the whole period, the trend suggests accelerating growth. Kohut (1974) has compared composite growth and obsolescence curves for the US periodical literature of geoscience, based on a well defined population of articles from 12 journals. The proportion of articles contributed by each journal varied considerably over time; nonetheless, over 70 years annual production has increased by a factor of 10.3, and the growth rate has been roughly exponential. Magyar (1974) has analysed the literature characteristics of a very small, new sub-field (dye lasers) and found linear growth in the numbers of papers produced (1966-1972). In a further sub-field (application of dye lasers) the growth rate was more rapid than in the research field (dye lasers).

Some data on the size of social science journals in terms of numbers of articles per year was collected by DISISS. Data was gathered from 20 journals, where available, from 1920 to 1972 (Table 87). The average number of articles per year was calculated at intervals between 1935 and 1972 for five groups of journals (all journals, psychology journals, sociology journals, journals published in the USA, and in the UK (Table 88)). The distribution of averages obtained is shown in Figure 30. A description of the procedures followed in journal selection, data collection, and the operational definitions used is given in Appendix C. Data collected for economics journals by Fletcher (1972) has been used as well.

The average number of articles per year in the 20 social science journals rose by 50% between 1935 and 1972 from 41.4 to 61.0, showing the most marked rise between 1955 and 1962 (Figure 30(a)). In the same period the average length (total pages, and not article pages only) of journals rose by only about 20%. Most of the increase in the average number of articles appears to have been accounted for by the US journals, and in particular by those in psychology; this result is however likely to be biased by the larger proportions of US and psychology journals in the group. On average the UK journals had more articles in 1935, than in any other year since then, but this isolated result should not be over-emphasized, and the average number of articles has risen gradually since 1945. The average number of articles in sociology journals appears to have altered least of all, and has fluctuated since 1950. Economics journals tended to have fewer articles in them up until the mid-1960s, than either sociology or psychology journals, but they have shown more rapid growth since 1948 than sociology journals, but less rapid growth than psychology journals.

In view of the uncertainty and unreliability of many of these estimates, and because it is some time since a comprehensive survey was carried out, further research is desirable to find out more precisely the annual production of articles in the main subjects, and the rate of growth.

(2) Pages and length of papers

There are few estimates of the number of pages produced, and these are mainly in science and technology.

Keenan and Brickwedde (1968) produced data on the number of pages in AIP publications and Physical Review (from 1941 and 1920 respectively), and of the number of abstracts in Physics Abstracts since 1920. When this data is plotted on a semilogarithmic scale there is considerable variability from the straight line, although quite a good fit during the 1960s, indicating exponential growth.

The growth of the biochemical literature from 1947 to 1965 has been calculated using data on the number of pages produced (Biochemica et Biophysica Acta, 1966). The overall growth rate was assessed by taking a standardized page count of 12 biochemical journals; the literature as a whole had increased in volume by 83% in 15 years (1950-1965), and 70% of the increase in pages was concentrated on 4 journals. The growth trend is exponential with a doubling period of 4 years. It is significant that the growth study was closely tied in with a statement on the future editorial policy of Biochemica et Biophysica Acta, which dealt with measures to counteract the effects of the rapid growth of the biochemical literature; these measures included a request to shorten papers and more exclusive coverage criteria.

Emrich (1970) reports data on the increase in number of pages published in three types of primary publications by 18 engineering societies - proceedings, 1,000 pages in 1946 to 26,700 pages in 1966; transactions 11,800 to 62,000 pages, and periodicals, 4,400 to 10,000 pages in the same period of time. The IEEE reports an increase from 3,000 pages in 3 journals in 1946 to over 30,000 pages in 42 journals in 1966.

Menard (1971) analysed growth of various components of the US Geological Survey from 1870 to 1970. The cumulative number of pages produced by the Survey shows exponential growth; very rapid up to about 1920, then from 1920 to 1955 very slow with a doubling period of 70 years. More recently the growth rate has recovered (Menard, p.149).

Shilling (1962) found that the average length of articles in a group of US biomedical journals declined from 8.1 to 6.7 pages from 1950 to 1960; the decline may be due to greater density of words per page, or to brevity on the part of authors. Orr and Leeds (1964) suggest that higher density might apply to relatively few, mostly US, journals only; they suggest that changes in density have only a marginal effect on the validity of shelf occupation as a measure of growth.

Some data is available from a survey carried out by Wootton on the number of text pages (excluding advertising matter) in a sample of journals for 1960 to 1973 in science, social science and the humanities (Table 89) (Wootton, 1975, unpublished). The overall percentage increases for the period vary considerably - humanities (5.2%), social science (27.9%), and science (72.9%). These overall increases conceal the fact that a peak was reached in 1970 in science and humanities followed by a levelling off or decline in production. Only social science journals showed significant growth after 1970, with commercially produced journals growing more rapidly than society journals.

It was not possible within the resources of DISISS to collect specifically data on the average length of articles in social science journals although data on the average length of articles cited by social science journals is discussed in DISISS Report A3, section 4.0.

Tables 87 and 88 report data on the average length (total pages (including advertising matter)) of social science journals, and the plots in Figure 30 show trends since 1935. Since 1955 US journals appear on average to have been significantly larger than UK ones. Between 1955 and 1968 psychology journals were longer than those in sociology, but after 1968 sociology journals became the longest. The data on economics journals is not strictly comparable with either that on sociology or psychology journals.

(3) Abstracts and index entries

Attempts have been made to estimate growth in articles published on the basis of entries in indexing and abstracting journals. This procedure is open to numerous objections, as it is entirely dependent for accuracy on the adequacy of coverage of the secondary service, and even the most comprehensive services may be affected by availability (of primary journal, and indexers and abstractors), by economics, which may impose arbitrary limits on the number of entries, and by gradually improving coverage, which may produce exaggerated growth rates.

A limited amount of data on entries in social science indexing and abstracting services was collected (Table 90); in most cases journal articles as well as monographs and reports are included in the totals. The number of entries in the International Bibliography of the Social Sciences appears to bear little relation to the rapid growth of political science and economics journal titles already noted (section 2.3.3). However, the IBSS, along with many other secondary services, provides a far from satisfactory indicator of either production or growth, because of the effect of coverage and selection policies. Short time series and variability also hinder analysis. The generally poor status of secondary control and the fluidity of subject boundaries in the social sciences make estimates based on secondary services of even less use than in science and technology.

Louttit (1957) gives data on the number of entries in volumes of Psychological Index and Psychological Abstracts at five-year intervals from 1894 to 1954. The entries increased from 1,312 in 1894 to 6,392 in 1929, showed the usual decline during the Second World War, and rose to 9,120 in 1954. The growth curve for Psychological Abstracts (Figure 31) for 1894-1972 (selected years) shows an accelerating trend, with rapid post-war growth, but an indication of levelling off at the early 1970s. Until the 1950s the growth trend was linear with considerable variability. Psychological Abstracts and Sociological Abstracts data gives a trend more in line with the evidence for accelerating growth based on journal titles. The curve for Sociological Abstracts on the same graph also shows an accelerating trend. Some secondary services provide better data for growth estimates than others, but all are subject to variations in coverage which may or may not reflect 'real' growth in literature production. The growth curves for psychology by language of origin (Figure 32) based on data from Fernberger (in Ben-David and Collins, 1966) show accelerating trends for English-language material, but not for French or German material. The effect of bias in language coverage may have an effect on these estimates based on Psychological Abstracts, and further detailed research would be necessary to establish whether this language distribution for psychology literature is representative.

Data on numbers of abstracts was used by Holt and Schrank (1968) in a comparison of growth rates in psychology, economics, biology, physics and electrical engineering; the Index to Economic Journals was used for growth estimates by Lovell (1973) as well as Holt and Schrank. In both studies cumulated data, which fitted the exponential function was used. Anthony, East and Slater (1969) used cumulated and non-cumulated data from Physics Abstracts, and fitted exponential functions to both sets (1920 to 1968); allowing for the war period, the non-cumulated data gives a good accelerating curve. In view of comments expressed by

May (1966) on the use of cumulated data, it would be useful if studies also reported growth calculations on non-cumulated data for comparison. A useful source of data on the volume of abstracts produced is published by the National Federation of Abstracting and Indexing Services in NFAIS Newsletter covering the member services; the data provides some remarkable contrasts between on the one hand rapid growth in number of entries (e.g. Biological Abstracts, 6-fold increase, 1957 to 1971; Electrical and Electronic Abstracts, nearly 7-fold increase, 1957 to 1971; Physics Abstracts, 8-fold increase, 1957 to 1971) and on the other relative stability (e.g. Oral Research Abstracts).

Research into size, production and growth at the micro-subject level is useful because it reveals the considerable differences within subjects, due to such factors as research fashions, changes in emphasis (e.g. the development of applied research), and growth of new areas etc. The growth patterns of specialized subject areas may conform to an epidemic process (Goffman, 1966 and other references; see DISISS Report A3 for details). Over a relatively short period growth may pass through a complete S-cycle. An example is in the literature on Central Place Studies - 76 papers 1935 to 1939; 86 in 1945 to 1949; 182 in 1950 to 1954; 242 in 1955-to 1959 then a subsequent levelling-off in 1960 to 1965 (Clayton, 1970). Comprehensive bibliographies if truly comprehensive, unlike secondary services, provide excellent data sources for bibliometric studies and can be used with some confidence.

(4) The size of journals and changes in size over time

The number of articles contained in journals listed on CLOSSS and the use of this data in estimating the total production of articles have been discussed in section 2.5.1(k) and section 4.1(1) respectively. It is important to know whether the average size of journals (in terms of articles and pages) has changed over time before using the average as a multiplier with a primary journal time series. The studies of production carried out by Bourne (1962) were largely confined to one time period, so that one average value would suffice, but a more detailed knowledge of size and changes in size is required to produce reliable growth curves of article production. It is also desirable to distinguish between different types of article produced and to know their likely distribution across serials. An investigation (reported in Appendix D) has shown that different types of article have a varying expectation of being cited (citability); thus if an article growth curve is to be used as a correction factor in citation decay studies, it is important that it is related to those items most likely to receive citations - mainly authored articles, and not research notes or short communications.

Data on the number of authored articles in selected social science journals from 1920 to 1972 is given in Tables 87 and 88, and has been discussed in another context (section 4.1(1)). The object here is to compare it with other estimates, particularly in science and technology. Wood and Ferguson (1974) compared data on size of science serials collected by Vickery (1968) with data for a sample of 89 social science serials; the science journals contained an average of 85 articles of 7.4 pages length per year, compared with an average of 47 articles of 6.9 pages length for social sciences.

From data collected by Fletcher (1972) on 20 UK and US economics journals, the average size of journals declined from 35.4 articles in 1928 to 23.7 articles in 1948, and then rose steadily to 54.0 articles in 1969; the average number of pages per year followed a similar trend.

The average size (number of articles) of 5 sociology journals studied has remained relatively stable from 1935 to 1972, although after 1968 average length (total pages) increased considerably. The number of articles per year in individual journals tends to vary considerably. In American Sociological Review 80 articles a year were published in 1960 and 1962, but this fell away to between 55 and 63 per year between 1964 and 1972 in the years studied. American Journal of Sociology published 89 articles in 1972, whereas in previous years since 1945 the total was never more than 69, and as little as 44 articles. Sociological Review on the other hand has published less than 25 articles per year since 1945. A more detailed time series for three leading US sociology journals (American Journal of Sociology, American Sociological Review, and Social Forces) (Table 91) showed only trivial differences in the number of articles published over an eleven year period (1960-1971) (Line and Carter, 1974).

The average number of articles in 8 psychology journals studied increased considerably between 1945 and 1962, from 52 to 86 articles. The number of articles and pages in individual journals has tended to fluctuate irregularly, and the range of variation in size of particular titles is noticeable. In the 1960s Journal of Social Psychology had between one and a half and three times the number of pages as Psychometrika, but up to five times the number of articles.

The number of papers in selected successive volumes of Journal of Bacteriology rose from 84 papers and 9 notes in volume 59(1950) to 198 papers and 64 notes in volume 85(1963) (Kull, 1965). Data on change of size of geoscience journals from 1900 to 1969 has been collected by Kohut (1974); specialized journals in narrow subject areas have developed, whilst the older traditional 'general' journals (American Journal of Science; Geological Society of America Bulletin; Journal of Geology) have remained fairly stable or have registered a fall in the number of articles published.

A comparison of the widths (thicknesses) of serials and monographs in the social sciences, science and technology and the humanities has been carried out at the BLLD (Wootton, 1974). The average amount of shelf space occupied per title in the samples examined was calculated for 1964 to 1973 (1972 for monographs). Best fit linear and exponential functions were fitted to the data, in order to predict the future trend of volume widths to assist in planning future space requirements. The data revealed that the average width of serials was increasing in the social sciences, and decreasing in science and technology; humanities serials appeared to be remaining constant in width. Nonetheless, the average width of all serials was decreasing on a linear trend. Although the average thickness of monographs sampled from BNB and ABPR varied considerably each year, a linear best fit line indicated an increase (1.814 pages/year). Although the study made allowance for bindings and changes in binding policy it did not take possible changes in paper thickness into account.

Further evidence of a decline in size of science literature is in the reduction of article length for biomedical serials reported by Shilling (1962) (see section 4.1(2)). The length of papers in all science subjects with the exception of physics, appears to have decreased between 1949 and 1959 (National Science Foundation (1963)); the average length of physics papers rose from 4.5 to 5.3 pages, and the trend was still continuing in 1960s (6.5 pages at 1964) according to the ICSU/AB (1966). In the past physics papers have tended on average to be shorter than other science papers.

The data on widths (thickness) of social science serials at BLLD confirm the fairly general growth trend established by analysis of comparable data at least up until 1970. However, the science finding reveals an important trend which has considerable implications. The decline in thickness of science journals has occurred mainly since 1970, and appears to apply to the large and small journals alike. Some humanities journals have also shown a decline in thickness after 1970, but social science journals are remaining stable (see section 4.2(2) above for comparable data on page length).

(5) Relationship between measures

As noted, the most useful measures are articles and linear shelf occupation, but these are more time-consuming to calculate than titles and page numbers. It is therefore desirable to see how valid and reliable simpler measures are of the more difficult but more useful measures. Boutry (1969) found that trends based on the number of words in physics journals correlated closely with pages and shelf length occupation. Sandison (1974) has examined the inter-relationship between various parameters (typography, page and binding thickness, article length, articles per journal, pages per title, and shelf occupation per title per year). Sandison concludes that page thickness and article length appear reasonably constant (post-1945); and that shelf length, and number of articles and pages are also closely related.

DISISS carried out a similar study on 22 social science journals in which a correlation coefficient (r) was calculated for text page length and number of articles using data from up to 15 annual points between 1920 and 1972. The results (given in Appendix E) show that the two variables were not highly correlated. Page length could not be used with much confidence as a substitute for measurements of the growth in number of citable items (e.g. journal articles).

(6) Changes in the size of monographs

There is little data on the size of individual monographs and changes in size over time. Wootton (1974) analysed a sample of books listed in BNB and ABPR for the years 1965 to 1972. The average increase per year was about 2 pages, to an average size of 240 pages in 1972. A study with a larger sample, covering a longer period and the output of more countries might show a very different picture.

4.2 Concentration of articles among serials and identification of 'core' literatures

In section 2.2.6 the problem of delineating and of estimating the size of the 'core' literature of subjects was discussed. The 'core' of journals varies according to the criteria chosen, and over a period of time its composition can alter because of changes in the nature of subjects, user behaviour and the structure of the literature (e.g. the growth of literature in new journals). Two types of 'core' can be identified, which can be referred to as 'use core' and 'productivity core'. In this report the main interest is in the size, growth and characteristics of the 'productivity core', which can be identified by using a statistical procedure to construct a Bradford distribution (see Kendall (1960), Brookes (1968) for techniques employed). In the Bradford distribution the most productive journals are referred to as 'core' journals; the 'core' can vary in size and need not necessarily be small although the nuclear zone of highly productive journals in a Bradford distribution for a complete bibliography is usually small. The 'use core' is commonly interpreted as the most used, and by implication the most useful and significant literature. In practice the 'use core' is likely to have a fair degree of overlap with the 'productivity core', since the most productive journals are likely to be the highest status ones, which attract the most significant papers.

Quite a lot of data has been gathered on the 'productivity core' in various subjects, and this may give some idea of the size and type of 'use core' which exists. Some of the better data on 'productivity cores' comes from studies of near-comprehensive subject bibliographies; other data comes from the analysis of secondary services, but this is unsuitable for practical application because of the variable selection procedures usually employed for choice of journal coverage. Either type of 'core' can be of any size depending on the cut-off points chosen, and it is this arbitrariness which makes it difficult to determine for system or service design purposes the size and growth of 'core' literatures.

Some examples of various measures of concentration of articles or abstracts among journals are worth presenting to show the very wide range of application and results associated with the concept. Keenan and Brickwedde (1968), studying Physics Abstracts (1965), defined four groups of journals; high productivity core (186 or more abstracts), medium productivity (16-185 abstracts), peripheral (3-15 abstracts) and fringe (less than 3 abstracts). The 48 high productivity journals yielded 70% of abstracts in 1965. Martyn and Gilchrist (1968) suggest that if library demand were strictly correlated with citation some 2,400 titles might meet 95% of the demand. Vickery (1968) found that when applying a sample estimate to the journal holdings of the British Library Lending Division (BLLD), he could predict that less than 15,000 of the 26,000 titles would contain authored articles; he also found that 90% of articles appear in about 8,000 titles (30% of all titles). A useful comparison with Vickery's study was undertaken by Wood and Ferguson (1974), also at the BLLD; basing their work on a sample of social science titles, they calculated that 92% of articles appeared in 52% of all titles. Some of the values quoted here (e.g. Vickery; Wood and Ferguson) may be liable to sampling errors and variations due to inclusion of different kinds of serials.

Measuring concentration by analysis of in-library use data is more difficult and more likely to be prone to sampling errors; the relationship of the journals listed as used to the whole population of relevant journals can rarely be computed or defined accurately. Also, libraries vary greatly in the uses made of them so that one library can rarely use data collected in another. Any reasonably comprehensive study of library use can provide a measure of concentration. Interlibrary loan demands are a better source of data, and the upper sections of such frequency distributions often show good agreement with use and citation data (see DISISS Report A3, section 1.4).

Another aspect to consider is the concentration of citation or use among articles and a comparison of this with concentration of citation or use among journals; very little work has been carried out on this. Studies of the Physical Review by Kessler and Heart (1962) and Line (1974) show that within a high status journal there is considerable concentration of citations upon a limited number of articles; such phenomena introduce complications into the concept of 'core' and 'peripheral' journals. Line, Sandison and MacGregor (1972) provide similar evidence for 3 different high status journals.

The above studies suggest that whether use or productivity is considered there are likely to be wide variations in the concentration of articles among titles. For the design of bibliographical services it is important to know in detail about the composition and behaviour of 'core' literature, and about differences between specific subject areas. In practice, data on use and the 'use core' is more difficult to obtain, so that the validity of using citation data as a substitute should be considered (see DISISS Report A3, section 1.4).

4.3 News journals

Some social science serials can be rather loosely described as news, popular, or non-academic journals; they tend to give prominence to current and topical matters, and to be of particular interest to professionals, practitioners and researchers. Their main purpose is the rapid dissemination of news and other information; as a result they tend to have characteristics which identify them as a generic group of primary journals. Such journals are generally published monthly or more frequently, contain a wide variety of written material (which often but not always excludes formal research papers, although summaries of research reports can appear), have shorter rather than longer articles, and are presented according to 'journalistic' rather than academic standards. It is difficult to lay down strict criteria for definition; in fact news journals are part of the broad continuum between the primary serials, which concentrate on publishing scientific papers of a theoretical or empirical nature, and news magazines and newspapers.

News articles occurred in 32% of all serials on CLOSSS and formed the third commonest type of contents; they occur in other types of journal besides news journals strictly defined. By subject, news articles appeared in 72% of architecture serials and in 46% of education serials, but in only 22% of history serials, 20% of sociology and law serials, and 18% of anthropology serials.

It is clear from the results of the sub-study described below that news journals cannot be defined solely by the proportion of news items carried; in the news journals examined, on average only 23% of material consisted of news articles, although the publications come well within the general definition given above. There are not a few academic and learned journals that contain a substantial number of news items, comments, letters and advertisements.

Further information was gathered about news journals in a sub-study carried out at the library of the Polytechnic of North London. A group of 18 titles published in 1974 , considered to represent the category, was selected from about 30 of the type (Appendix F). The data collected has been tabulated in Table 92. The subjects with the most news journals in the group were economics, management and the social services. Of the 18 titles examined 44% were monthlies, 33% weeklies and 17% quarterlies; differences in frequency of issue seem to be closely associated with the amount of news material carried, with weeklies carrying the most news material. Associations and professional bodies were responsible for 44% of titles, compared with 39% for commercial publishers. The analysis of content might appear surprising, with 23% news articles to 29% articles and 14% illustrated material; advertising material accounted for about one third of the space available. Size measured in pages per year was as follows: 0-499 pages, 7 titles (39%); 500-999, 4 titles (22%); 1000-1499 pages 1 title (6%); 1500-1999 pages, 1 title (6%); 2000-2999 pages, 1 title (6%); and 3000 or more pages, 4 titles (22%).

A study of weekly journals in planning (i.e. news journals defined specifically by frequency) has been reported by White (1974). A rather different approach from the DISISS sub-study was used, concentrating on a subject and content analysis, and the accurate measurement of coverage in terms of column inches, corrected for page and type size; consequently the results of OIP and DISISS studies cannot be compared. The study examined 14 journals, all published in the UK; a geographical bias to coverage of news and events in South East England was noted. Locational bias in coverage is a hazard peculiar to planning literature as a whole.

In science a study of the use of a current news journal by chemists was carried out by Wood and Ronayne (1973). The authors did not consider the content characteristics and other details of the service involved (Chemical and Engineering News).

Whilst the main audience for social science in the USA amounts to about 150,000 persons (National Academy of Sciences, 1969) the peripheral audience of popular social science is perhaps between 1 and 1.5 millions (Horowitz and Barker, 1974). A similar relationship is likely to exist in most of the 'developed' countries. The existence of a wider audience has led to the creation of journals to assist in the popular diffusion of social science information. These have been called 'mediating' journals; they have some similarities with news journals in that they may be read by practitioners and professionals. However, research or research based articles form the major part of the content. New Society is the best example in the UK; Society (formerly Transaction), Psychology Today and Intellectual Digest are examples from the USA. Quite a large number are found in France, Netherlands and Federal Germany.

Serials concerned with diffusion and popularization of information are excluded from WLOSSP. Meyriat (1967) found that in a group of 400 titles analysed by the Centre de Documentation Contemporaine of the Fondation Nationale des Sciences Politiques, 72 were social science periodicals as proscribed by the WLOSSP definitions, about 40 were general journals aimed at the non-specialist public, and the remainder were news bulletins, house organs, etc. Meyriat regarded the general journals as equivalent to weeklies published in the UK or some illustrated magazines published in the USA.

4.4 Review literature

Virgo (1971) identifies three types of review: annual reviews (usually published as monograph series), critical reviews, and data compilations (usually but not exclusively published in primary journals). Woodward (1974) considers seven types of review: (i) critical/evaluative/interpretive/speculative, (ii) state of the art; (iii) historical/biographical; (iv) tutorial; (v) technical; (vi) popular/topical; and (vii) article and book reviews/comments. Woodward studied types (i) to (vi), and decided that there were at least six main characteristics which could be used to identify them; among these were, that they reported no original research, stated explicitly their purpose in the title, and contained a large number of references. In practice, it was found difficult to apply these criteria rigidly. The use of numbers of references as a criterion was examined by Woodward, using the ISI Source Index. Using a cut-off at 30 references would miss between 10% and 17% of reviews, and at 40 references between 15% and 25%. Of the items containing more than 40 references only 35% could be considered as reviews.

Studies of the review literature of various subjects in science and technology have been produced (Fix, 1964; Virgo, 1971; Stern, 1971). The special problems associated with their production and bibliographical control have been discussed in the studies mentioned above, and in others by the SATCOM Committee (Committee on Scientific and Technical Communication, 1969), Passman (1969), Siegmann, Rogers and Ruetter (1971) and Seetharama (1973). Surveys of use and user reactions to reviews have been carried out by Harris and Katter (1968) and Stern (1971).

An estimate of the number of reviews produced in various science subjects is given in Table 93 (after Fix (1964) and others). In medicine the ratio of review articles to all articles has been about 1:38, over the period 1955-1970 (Virgo, 1971). Woodward has produced data on review literature, according to source of origin (Table 94). Altogether in 1972 the output of scientific reviews of reasonable quality (according to criteria identified by Woodward) was about 22,000, which is rather less than 2% of the world's scientific and technical literature. An estimate of the number of reviews per year in the social sciences has not been produced, although a rough guess is possible. Allowing for the fact that different criteria to define reviews may be required three review articles per year appear on average per social science journal[1]. Analysis of serials on CLOSSS (Table 19) revealed that no more than 400 titles contained review articles, out of some 3,500 - this would suggest that roughly 9% of social science journals contained review articles; in addition there were 6 titles which published only reviews. This suggests that about 1,200 reviews appeared in 1970. As it is most unlikely for review articles to appear consistently in other than academic/research journals (of which about 5,000 exist), it would be misleading to multiply the average number of reviews per title by a larger number of serials, such as those listed as social science received by the BLLD or listed in Ulrich (Table 4). Allowing for growth in both journals and review articles (which is now quite likely) it is possible that in 1974 about 1,500 review articles were produced in social science journals. These totals could be further inflated by reviews appearing in annual reviews or as chapters in monographs, reports, festschriften, collections, etc.

By subject, on CLOSSS 41% of linguistics serials, and 27% of education serials contained review articles. In social welfare, criminology and economics the proportion of serials containing review articles was around 5%. Review articles appeared most frequently in serials sponsored by educational institutions (14%).

However rough the calculation, it is clear that the ratio of reviews to primary articles is much smaller in social science than in science. The ratio of reviews in science to reviews in social science (using Woodward's and DISISS estimates) was about 16:1 in 1972. The ratio of reviews to primary articles is approximately 1:45 in science and technology, and 1:133 in the social sciences (using article production data from section 2.7.1(1)) in 1972. The larger the size of the primary literature, the greater the need for reviews to summarize, synthesize and evaluate it, so that one might expect the ratio to be higher as the literature grows larger. It may be also that scientific literature, much of which can be consolidated, lends itself more to reviews than social science literature. Many writers have continued to stress the need for more reviews of all types, and the need to improve bibliographical control of existing reviews. Methods of sifting the literature based on citation analysis, network analysis and clustering could be of great value, but in the end it is necessary to entrust production and evaluation to those professionally and intellectually competent to do so. The problems and possible solutions for improving the amount of quality of review literature in the social sciences are considered in DISISS Report A1.

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[1] A classic review article is one in which its identity and purpose is prominently stated in title or introduction; such a review will usually be heavily orientated to literature reviewing and attempt to give comprehensive or selective bibliographical coverage over a stated period of time. The value of 3 reviews on average per journal year was based on an examination of the 1970 issues of a number of social science journals in Bath University Library.

4.5 Book reviews and book reviewing journals

There is very little bibliometric data available on book reviews. On the CLOSSS file 36% of all serials and 70% of all journals contained some book reviews; in practice the number of reviews per journal varies tremendously, and specialized book reviewing journals have developed to meet the need for efficient dissemination. By subject, 60% of history serials, 54% of law serials, 32% of political science serials and 24% of economics serials recorded on CLOSSS contained book reviews. The quantity of book reviews produced is without doubt large. Like other articles they show a significant decay rate, so that the number of critical reviews which continue to be in demand after the appearance of the original work is probably quite small. In view of their wide distribution in the serial literature the problem of bibliographical control is important and remains largely unsolved. Critical book reviews are important in nearly all fields, but there is no evidence to suggest that quantitatively or qualitatively they are more important in the humanities than in the social or natural sciences.

4.6 Numbers of papers translated

Using Vickery's estimate of 850,000 scientific and technical journal articles produced in 1965 (Vickery, 1968), Hutchins et al. (1971) estimate that some 450,000 of these are in languages other than English (the number of non-English language scientific papers appeared at that time to be growing at about 4% per year). Given that the number of serial titles in the social sciences is about half that of science and technology (Table 3), and that social science serials contain on average only about one third the number of articles per year, the number of non-English language articles in the social sciences produced annually may be between 75,000 and 100,000.

Each year some 50,000 new translations are listed as publicly available in the World Index of Scientific Translations (WIST). Some 25,000 translations are added yearly to the index maintained by the British Library. A brief survey of social science translations made and listed in WIST, and including translated articles in cover-to-cover translations and other journals, suggests that no more than 1,000 are produced per year on a fairly strict definition of the social sciences.

The INFROSS study (Bath University, 1971b) and the survey by Hutchins et al. showed that social scientists were rather less competent than scientists to deal with foreign language materials; both groups reveal a low level of citation and use of such materials. Wright (1971) suggests that low use and citation may be due to the fact that social science ideas do not travel well across cultures and languages, and that national schools of thought and parochialism prevail. There is little incentive for social scientists to indulge in relatively costly translation activity. In science and technology the penalties for adopting this attitude are much greater, particularly in the applied sciences where commercial factors are involved.

The total stock and annual production of translated material in the social sciences are very small, whether published and recorded in one of the indexes (BLL Translation Bulletin, WIST, Translations Register Index, the CNRS Catalogue Mensuel des Traductions; etc.) or unpublished or made available under restricted conditons, such as through Aslib and its Commonwealth Index of Unpublished Scientific Translations, which lists some 200,000 translations from all parts of the world. The small quantity of papers translated is a result of lack of motivation, low level of perceived need and economic factors. The number of important non-English social science articles of a conceptual or empirical nature is likely to be far fewer than 100,000 per year, and perhaps very few (less than 5,000 per year) would really justify translation.

4.7 Theses

The growth in production of theses in all subjects accepted by universities and the Council for National Academic Awards in the UK between 1950/51 and 1970/71 results in a non-linear growth curve (Figure 33). The point of inflexion into a period of rapid increase in the 1960s is typical of many other literature growth curves, e.g. UK social science book production (Figure 27), and certain growth curves for serial titles (Figures 2(f) and 2(j)), and must be related to the accelerated spending on research and higher education in that decade. The theses production curve also shows a reduction in the rate of increase at the end of the 1960s. The reduction in the rate of spending on research and higher education in the early 1970s may continue to act as a brake on literature production in this area, if the volume of postgraduate work is affected, although in other areas of scientific literature the cutbacks appear so far to have had little effect (see section 4.11). The production of theses in the social sciences has not grown as rapidly, although the contrast before and after 1960 is considerable; it would appear that the proportion of social science theses to all theses has fallen, despite the growth in absolute numbers of the former.

4.8 International periodical publishing

A survey of the international social science press was made by Lengyel (1967); international journals were defined as those published by international organizations or which profess a naturally international vocation. Responses were received from 28 out of 55 journals contacted. Journal lengths ranged between 150 and 850 pages per year, with a mean of 600 pages; on average 70% of space was devoted to substantive articles. Only 15 of the 28 published in more than one language. Circulation varied from between 300 to 5,000 copies, with a mean of 2,000 copies. Lengyel suggests that an important role of such journals is to act as guide to events and trends in subjects.

4.9 Official publications

Official publications (OP), also referred to as government publications, originate from a wide variety of sources, e.g. national and federal governments; state and local governments; governmental agencies; non-governmental agencies; international organizations; and supra-national bodies (e.g. EEC, OAS).

Ollé (1965) identifies characteristics which makes the form a focus of attention for documentalists: (i) the large quantity produced, (ii) their importance as a source of information, (iii) method of publication and distribution, (iv) problems of formal classification, (v) special needs for bibliographical control, (vi) special treatment in libraries, etc., and (vii) problems of cataloguing and of access via catalogues.

Official publications cut across the three conventional categories of material - serials, monographs, and technical reports and a variety of report type documents. A significant proportion could be classed as legal or semi-legal material, thereby adding another dimension to problems of their bibliographical description and control

In Table 95 various estimates for UK production are given based on Marshallsay (1972); the same source also quotes data on the number of accessions of official publications at the British Library Reference Division's and State Paper Room (now Official Publications Library); in 1966, 916,517; 1967, 877,299; 1968, 750,636; 1969, 687,272; and 1970, 688,872. The decrease in accessions is due to staff shortages, etc., and not to an actual fall in the number of items produced. Some 10% of accessions were UK government, 80% overseas governments, and 10% international organizations. Marshallsay estimated UK production of OPs in 1969 at about 75,000 items, of which 7,000 originated from HMSO. Ollé suggested that UK production was about 40,000 items in 1965, but it would be highly conjectural to relate this figure to the one produced by Marshallsay for 1969, and to derive a growth rate. From the rather crude data available, and covering the whole range of types of publication, the growth rate of OPs may well exceed that of serial titles (3% - 4% per year) and monographs (in the range of 3% - 10% or more in certain areas).

There are no detailed studies reported of the subject breakdown of UK official publications. A rough estimate from Government Publications shows that as much as 80% of UK official publications are in social science subjects; commerce, economics, foreign affairs, and law are major sub-fields. More data on the use and demand for official publications would be valuable for service design purposes. The proportion of OPs cited on the DISISS citation file is about 3.3%; legal materials account for 2.1%, but these figures do not include citations to official serials. Heavy use of and latent need for OPs is likely to be associated with the social sciences. For system design present knowledge of size and growth of official publications is inconclusive.

4.10 Data bases and mechanized bibliographic files

A survey of the size and growth of information resources must consider new forms of activity as well as the traditional ones. Production of machine readable bibliographic data files really began about 1968 and the early 1970s have proved to be a period of rapid growth. Most of the applications so far have been in science and technology; a smaller number are relevant to or have been specifically concerned with the social sciences.

A convenient review of progress in the social sciences is given by Gechman (1972). In the academic sector in the USA, 9 applications are listed, and 9 applications are recorded in the US government sector. The 'information industry' in the USA recorded 6 centres of activity. Amongst professional organizations the American Psychological Association is the main data base producer. Some of these organizations have files available for lease or purchase. Other developments outside the USA are mentioned; one each in Canada, Czechoslovakia and France, and two in Federal Germany. Already a number of other services have been announced in the technical literature since Gechman's survey. International organizations (ILO, FAO, UNIDO) also operate data bases.

Schneider, Gechman and Furth (1973) noted the rapid growth and wide variety of commercially available computer readable bibliographic data bases. By 1975 it is estimated that there will be about 150 available data bases in the

USA (Gechman, 1972); and rapid growth in the number of data base operations was forecast for the rest of the world. There are also likely to be a large number of locally available data bases, particularly in libraries using either locally or centrally generated records; recent surveys of the UK show that local computerized bibliographic data base activity exists in many libraries (Aslib Computer Applications Group, 1974; British Council, 1974).

It is impossible to predict what the future pattern of growth is likely to be (regular, variable, linear, etc.).

4.11 Literature growth and socio-economic activity

The size, demographic and occupational structure of the population, and the level of economic, cultural, social and political development of a country may be substantially related to the amount of literary and intellectual activity. An understanding of the behaviour of socio-economic variables and literature production is useful in two ways. First, where intuition and observation suggest the existence of a relationship, comparison of past trends may make it worthwhile seeking a causal link which can be tested cross-sectionally,e.g. Blute (1972). Second, when a relationship is suspected an examination of the more recent trends may show changes in socio-economic factors (e.g. research expenditures, number of graduates), which may foreshadow a reduction or expansion of literature production. There are many reasons why forecasting of this kind can be misleading - the complicated relationships involved, time lags, and behavioural factors which are difficult to quantify. However, as it seems likely that levelling off in growth is now a possibility (section 1.3), analysis of socio-economic and literature data may provide a relatively straightforward way of testing this hypothesis. If the trends are not too confused because of short term variability the conclusions will be of value in constructing growth models, which can be used to generate forecasts.

Most of the studies reported have done little more than compare two or more sets of time series. The relationship in the widest sense was discussed by Machlup (1962), but the best known statement has been made by Price (1967), who regarded gross national product (GNP) as the best indicator of scientific capability. Price calculated that investment of a constant share of GNP was required to stay in the 'science race'; in 1967 it was about 0.7% and was likely to rise to about 1.4% by 1976, if levelling off did not occur. Meadows (1974) suggests that, although funding, manpower and literatureproduction are related, growth rates may differ, and he has stressed the effect of time lags; literature production may continue steadily for some years, even after a reduction in funding, because scientists continue to work and reanalyse accumulated data. Increases in funding may take several years to show in increased production of paper, because of elapsed time in setting up and developing projects.

In a cross sectional analysis Blute(1972) showed that scientific growth does not greatly outstrip economic growth. Power functions relating percentage increases between variables in a linear fashion were found to be more satisfactory than several others, including the exponential, in approximating the relationship between publication and two indices of economic development. A 10% increase in the development index was associated with increases of between 7.5% and 12.5% in publications. An analysis of residuals of country by country deviations of the actual publication scores from two of the fitted power functions was performed to suggest other variables which would be required in a fuller model of scientific growth. Because scientific publishing is international, the publications index becomes a less accurate index of national scientific activity; thus the many Canadians publishing in US journals make the number of journals published in Canada a biased index of scientific activity there. Similarly Swtizerland, Belgium and Austria produce a disproportionate share of journals, mainly because of the presence of international agencies, and a well developed publishing sector.

Other things being equal, a populous country is likely to use and produce more books than a small one. However, if countries are ranked by books produced per population it can readily be seen that the rank list is very different from that of absolute figures of production (Tables 96 and 97). Small highly literate countries such as Switzerland or the Scandinavian countries have to produce a certain number of books to satisfy their own population, so that a small literate country can be expected to have a higher figure per head than a large literate country. The second major factor affecting book production is the degree of economic and cultural development. The two forms of development are related; most countries with highly developed economies are likely to have a strong and active cultural tradition, more education and a higher degree of literacy than less economically developed countries. On the other hand, some developed countries publish many more books per head of population than others of a similar size. Political factors may also play a part; for example, a state may publish large numbers of ideological books, aimed at adults or schoolchildren or both; conversely political and social factors may prevent a free market in literary production. With widely spoken languages, the major countries are likely to have a large export market, and produce titles (as well as copies) beyond their own needs. This is true of countries such as the USA, UK and Spain, and to a lesser extent France. The foregoing factors all concern comparisons between countries. Within a country, the main factors affecting book production from year to year are undoubtedly economic. Cultural factors such as literacy change only slowly, and their effect on book production with the country is likely to be so slow as to be almost imperceptible. The ability of publishers to produce, and even more of individuals and libraries to purchase, books can however change quite quickly.

A preliminary examination of the relationship is possible by comparing book production, population and national accounts data (gross national product (GNP) and gross domestic product (GDP)[1]). Table 98 shows absolute and ranked data for book production, population and GDP for the top 45 book producing countries at 1969, together with indices for (i) the number of book titles produced per million population, (ii) the GDP (millions US $) per million population, and (iii) the number of book titles produced per million US $ of GDP.

The relative ranking of countries on the various indices is compared in Table 99 and Figures 34 and 35. Population and book production on a crude basis are hardly related at all, but this is clearly because of the strength of economic and social factors; an examination of the GDP indices makes this clear. Figure 35 is a scatter-gram for book production against GDP, and shows that the two indices are relatively strongly related, if not on a linear basis, then in terms of the three clusters, which appear to group countries with roughly similar economic and social levels. Cluster (A) includes mostly developing countries with low per capita GDP and book production; Italy falls on the margin of this group. Cluster (B) contains a mixed group of developed economies. The position of Canada and the USA on the margin of the group should be noted. Book production statistics are a poor index of overall scientific and cultural activity for the USA. Cluster (C) contains developed economies with small population, a relatively rich resource base and high social and cultural levels (Netherlands, Sweden, Swtizerland, Finland, Denmark and Norway).

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[1] GDP data is not available for the countries of Eastern Europe and the USSR.

The meaning of the indices on Table 99 is relatively straightforward, with the exception of that relating to the number of book titles produced per million US $ of GDP; the ranking can be examined from low to high values or vice versa. Reading from the low to the high values suggests that there are some relatively poor countries with a relatively large book production (e.g. Burma, Sri Lanka, Portugal, but not in fact Finland or Israel which appear here for some other reasons); and at the other end of the scale, very rich or relatively rich countries with a low book production (e.g. Canada and Australia, but not Italy which rates 6th on GDP but is 12th in book production). Cultural development does not provide a satisfactory explanation for this index.

To supplement the cross-sectional comparisons time series for book and serial title production, population, and GNP in the UK and US are shown on Table 100 and are plotted in Figures 36 and 37. The relative rates of growth are compared by using a common base point (1951 = 100). Gross national product has grown more rapidly than population or production of social science serials. The monograph curve for the US is more difficult to interpret, because of the possible effect of changes in criteria for including material in the source bibliography; the levelling off in production is not apparently related to any similar trend in GNP. Monograph and serial titles data is not, however, the best indicator of literature production, and ideally curves based on the numbers of articles produced should be substituted. However, the relative rates of growth of the various indicators are established and need to be taken into account in any general study of the relationship between scientific activity and socio-economic development.

Menard (1971) has reported data on the relationship between a wide variety of literature, funding and manpower indices. Indices for Federal R & D funding approximate to an S-curve over the period 1900 to 1970 (Menard, p. 76); there was rapid exponential growth in government research funding during the 1930's, followed by less rapid growth, and then by a definite levelling off in the mid-1960s. The science and technology component of the US labour force has grown more rapidly than the total labour force or population from 1900 to 1970. Meadows (1974) has examined growth rates of US learned societies using 1920 as a base year; by 1950 the greatest relative growth had been achieved by the American Psychological Association. Lesser growth rates (in descending order) were recorded by the Federation of Societies for Experimental Biology, American Physical Society, American Mathematical Society, American Chemical Society, American Sociological Association, and the American Historical Association.

Looking at research funding and output of papers for 1950 to 1970 in the US, Menard found that for science as a whole the growth in papers was less rapid than research funds, but that while funds were levelling out in the 1960s the number of papers contined to grow, although less rapidly than hitherto. In biology funding contined to grow although the output of papers tapered off, with a sharp inflexion on the curve about 1962; no such inflexion occurred for physics papers in the early 1960s. Both physics and biology showed rapid growth in papers in the late 1950s (Menard, p.81). Figure 38 shows Federal R & D expenditures, and output of papers and doctorates in science and engineering; it shows that the response to the rapid rise in funding in the 1940s, took up to 10 years to affect production of papers and doctorates.

A graph of the number of pages of geological reports and geologists shows that in the early 19th century the output of literature rose much more rapidly than manpower; in the 1960s the reverse was occurring (Menard, 1971). Using US Geological Survey data (1870 to 1970) the graph shows a tapering off in literature output but steadily increasing research funding (Menard, p.149). Menard's work shows how necessary it is to have detailed indices of different types of manpower and funding. Other evidence of the decline in average productivity of scientists is discussed by Beck (1970) and Garvey and Griffith (1972). Beck points out that the logistic pattern in growth is unacceptable to the Soviets because it implies that a limit on science suggests a limit on national productivity; Soviet science policy seeks ways of increasing productivity of scientists. Garvey and Griffith show that average productivity in psychology has decreased during the present century; up to 1910 manpower and publications increased at a similar rate, but since then the former have risen more rapidly. An increase in joint authorship may be having a significant effect here. The measurement of productivity in terms of scientific papers is not very satisfactory; after all, real increases in productivity could be achieved by greater use of the existing literature, irrespective of a more rapid growth of output papers in future.

Lovell (1973) graphs (i) the cumulated totals of articles in the Index of Economic Journals, PhDs (in economics), and membership of the American Economic Association, and (ii) economics journal articles, PhD's (in economics), and the number of economics journal titles. In (i) articles and PhDs show an almost identical trend; in (ii) the fall in output of PhDs during the war and the rapid recovery afterwards appears to have had little effect on the output of articles and journal titles. In the short and medium term, variations in manpower and funding may have relatively little effect on literature output, because of time lags and the fact that inputs of funds do not directly affect those scientific activities which directly underlie the communication stage. An overall increase in scientific activity is usually matched by an increase in administration and other non-technical activities. Further investigation might show that literature output is relatively immune to the effects of other factors which contribute to science. Meadows (1974) suggests a mechanism whereby publication is regulated by the mix of economic and resource factors, irrespective of the scientific importance of the topics concerned. No one effect or process can be said to dominate.

On the exploratory evidence presented, scientific and literature growth and socio-economic activity are visibly and generally related, but not apparently to the level at which one could provide a useful predictor for the other. Furthermore, the detailed data necessary to examine the particular case of the social sciences is lacking. The measures chosen may well be inadequate and too coarse; GNP and GDP measures must be broken down into their components, e.g. research funding, resources devoted to higher education, etc., and combined with more accurate measures of literature growth. Blute's view is largely confirmed - that simple general indices are inadequate for providing a deeper insight into the complex interrelationships which exist.

4.12 Number of personnel, researchers and authors

The numbers of personnel, researchers and authors, the amount and availability of research funds, and the amount and distribution of the gross national product have an effect on the production and growth rate of literature; in addition, the average productivity of authors, the proportion of researchers who are authors, changes in the productivity of authors over their working lives, and the extent of multi-authorship are more detailed and specific determinants. Although there is likely to be a fairly strong degree of association between these variables, the relationship is unlikely to be a straightforward linear one. The evidence available, of which some is reviewed in this section, tends to support the relationship between various social, economic and educational indicators and literature growth, but in a general and rather imprecise way. Over a long period of time the trends are likely to be similar, although the exact natures of the linkages and relationships are complicated; for instance, the growth of literature would be expected to lag behind that of population and research resources, but the exact length and behaviour of the lags have not been established. If sufficiently accurate data could be obtained on the trends, in order that the relationships could be better understood, it might be possible to use various types of socio-economic and behavioural data to predict literature growth; this is certainly not the case at the moment, but would form a useful contribution to future research.

Stoddart (1967) used the number of persons with various academic qualifications as a measure of growth in geography, and found that since 1940 the cumulated number of all US PhDs, and of US PhDs in earth sciences and geography have grown exponentially, doubling every 8 years. Cumulated data on the number of UK higher degrees in geography and geomorphology showed exponential growth since the late 1950s, doubling every 5 to 6 years. In terms of periodicals and geographical societies founded, the growth of geography was less than that of science as a whole.

Beck (1970), in a study of the USSR, used data on the number of graduate engineers and scientific workers with data on scientific publishing and funds. He found a diminishing return in publication for increased expenditures in funds and scientific personnel: evidence which might contradict the expectation that productivity would be maintained, irrespective of growth in numbers of researchers and authors. In technology the number of graduates rose from 91,000 in 1958 to 217,200 in 1967, and the production of books rose from 15,200 to 22,400; yet the number of books per 100 engineers fell from 16.7 to 10.3. The total number of pages produced in all scientific research monographs fell, although the number of titles doubled in 12 years. Beck's data records very substantial increases in the manpower of physics/mathematics, chemistry, geography, mineralogy/geology and biology - without exception productivity fell when measured in books or articles per 1,000 scientific workers. Whatever the effect on productivity, growth trends in publication and numbers of researchers are matched fairly closely.

In the forecasting study by Anderla (1973) the future increase in scientific manpower is taken into account, although he regards estimates of manpower as suspect (p.23). Anderla quotes Price (1963), who estimated the number of persons in the USA with scientific and technical degrees at c. 1,000 in 1800, 10,000 in 1850, 100,000 in 1900 and about 1 million in 1960, equivalent to a rate of growth of 4.7% per year. Anderla finds that discussion of the relationship between the size and growth of literature, graduates, researchers and authors, and number of documents produced per capita is fraught with assumptions and difficulties arising from categorization and coverage (pp.25-25). There are both researchers and practitioners to take into account, as well as the level of qualifications reached. Use of the data for forecasting requires considerably more detailed and specific analysis of the relevant causal connections.

Further reference to this and other aspects of forecasting are mentioned in DISISS Report A1.

5.0 LITERATURE CHARACTERISTICS AND SYSTEM DESIGN

5.1 General context

Published literature has continued to grow for the past two decades at least, whatever statistical measures are used. The most likely reasons for continued growth can be investigated by studies which relate size of book and literature production with such factors as GNP, population size, and funds devoted to education and research - these variables tend in the long term to correlate positively with literature growth. Increased literature output is one of the correlates of economic and social progress.

It has been supposed by some information scientists that the rapid growth of literature constitutes some kind of a threat, both to those who would control documents and those who would wish to use them. This assumption may be questioned on various grounds: statistical (growth rates may have been exaggerated), and technical (methods of control should be able to keep up with a fair growth rate). For instance Raisig (1966) has argued that, because the significantly cited literature is fairly stable across time, growth contributes relatively few 'key' channels to the literature; also, that 'key' channels develop slowly. Growth in a well established area tends to fill it out through greater specialization, without replacing the established 'key' literature. Peripheral literature, however defined, may thus grow more rapidly than so-called 'core' literatures. Other growth is a result of the birth of a new area of interest. Key channels develop, and later the pattern of the well established area is found. These are attractive hypotheses but they require thorough empirical investigation. The epidemic theories of Warren and Goffman have analogies in Raisig's two states. However and wherever the growth occurs, it is its nature that is of major importance - is it irregular, linear, accelerating, or exponential; does it affect a large or small area; what type of fluctuations occur, and are signs of levelling off, saturation, or decay apparent? These and other questions should be asked in every bibliometric study which is intended to provide the service designer with management information. In considering the implications of size and growth for bibliographical information services and systems facts rather than assumptions must be used.

Care has been taken in the compilation and analysis of the data used in this report to assess its validity and the relevance of the measures, as to whether real or apparent changes in conditions are taking place. The global, national and subject treatments of the data have revealed trends that are fairly clear in some areas but equivocal in others. To verify these tendencies or to check their statistical precision it will be necessary to acquire a deeper statistical knowledge of the literature; but it is rather doubtful whether more statistical refinement alone is enough, in view of the fact that the techniques and methodology of studying subject area differentiation, potentially the most interesting part to the bibliographer, are weak, partly because of the reliance on 'ad-hoc' classifications.

There is no doubt that growth, whatever its precise rate, has had important implications for the characteristics and number of bibliographical services, their coverage patterns, and effectiveness. The data on size of literature production in the social sciences can give some indication of the potentially incomplete coverage in the main disciplines, and although it is desirable to distinguish between major and minor works and serial titles this is rarely possible with the data available.

The question of definitions of the various types of literature (sections 2.1 and 3.0) can lead to difficulties when a general discussion of size and growth is required. Because a precise delimitation of literature form is often impossible with the available statistics, it may be necessary to talk mainly about size and growth in terms of bibliographical records or bibliographical units, and to confine categories of form simply to serials or non-serials; at least until more detailed studies can be carried out, e.g. into research monographs, theses, official publications, semi-published reports etc. To the designer of information systems, bibliographical units are the most appropriate measure, since records do not need to differ very greatly according to whether an item is a conventional monograph or an official publication - or for that matter whether it is a serial article or a monograph; the problem in this case being that accurate figures for articles are hard to obtain. The librarian has of course to think in terms of physical as well as bibliographical units.

In view of the difficulties inherent in investigation of size, growth and characteristics the best practical course of action is to concentrate on the broad trends and problems which are likely to affect all bibliographical planning and to leave the minutiae of subject differences and comparisons largely alone. The 'threat' of size and growth to efficiency is of most significance at the strategic level, and within many subjects the problem is not one of size and its effects, but of a lack of access to the relevant literature through effective retrieval tools.

5.2 Implications of subject, geographical and language distributions

Subject boundaries are defined by many different processes, attitudes and interests; thus it is difficult to generalize about the implications of size and growth of subjects, as well as to delineate subjects, for the purpose of system or service design. There is often as well a very fundamental distinction between the individual user's viewpoint, and that of the bibliographer, information scientist, or service provider and designer. Individual users react to and adjust to their relevant literatures in many different ways. The overall effects of size and growth on the user may be very small, and the threshold of information overload is in any case rarely related to or determined by sheer size or distribution characteristics of literature alone. For the user the most significant factor is the quality of access facilities at his disposal; these determine bibliographical and information using behaviour quite strongly. Good access facilities - bibliographical tools, query and retrieval services, retrieval techniques, classification etc. - give the user relative immunity from many of the problems which arise as a result of the size, growth and distribution of literature.

The producer and supplier of services are thus placed in the key position, and efficiency in coping with bibliographical and bibliometric realities is determined by the techniques available for information management. Adequate recognition of the real issues and problems is an essential first stage, and it is here that basic bibliometric knowledge is valuable although not essential; significant progress has been made in the past, on the most limited and general knowledge of bibliometric phenomena. However, it is argued here that a more refined knowledge is useful, particularly if it leads to the development of more adequate hypotheses for understanding scientific communication, and extending the capability for prediction. The net result should be a better basis for service design.

The size of different subject literatures may be liable to a type of diminishing returns, for example, as indicated by the levelling off or saturation of growth curves. In chemistry, biology and medicine, specialization has occurred and reduced some of the problems of producers and users; in practice subjects develop more refined structures and useful hierarchies of bibliographical organization, control, coverage and service. Bibliometric studies have a useful part to play in monitoring and predicting this evolution of subjects, and identifying the implications for user needs, service provision, satisfaction levels, and costs.

The geographical distribution of a literature is a useful test of concentration, scatter and internationality. These distributions, taken together with similar ones from citation studies, provide measurements which can be matched against scientific and social models of communication, which have a valid role in the evolution of information policies and the practice of service design and management. Language distributions are usually evidence of language barriers; the language barrier in general is remarkably strong, despite the scattering of production on several different major languages.

These distributions influence both theoretical and practical aspects of information policy and service design. Differences between and within subjects in all these distributions of bibliometric parameters need to be recognised and evaluated before design decisions are taken.

5.3 Effects of size on design and operation of bibliographical information services and libraries

Growth in the number of secondary bibliographical information services, and as a result in the number of abstracts and index entries, has been considerable in recent years, although less in the social sciences than in the sciences; this is in part a response to the size and growth of literatures. This growth in literature may have indirectly assisted users, by accelerating the development of services and acting as a stimulus to greater co-operation and co-ordination.

Increasing size, however, poses serious problems for libraries which have limited acquisition budgets. The greater the literature available for acquisition the more difficult it is to ensure that the best selection policies are followed, in order to achieve the optimum collection (e.g. Douglas, 1973). Except in the case of serials, it may be very difficult or impossible to identify required works in advance of demand. It is hard to conceive of any mechanism that will significantly improve the present aids to selection of non-serials. In the case of serials, past uses, and interlibrary loan demands for titles not held, can help decide on the titles that should be acquired; citation studies, if proper analyses are carried out, can also assist in the decision.

Libraries - if there still be any - with a growth rate that keeps up with the growth in world publication, and with restricted buildings or sites, are faced with a serious problem since to keep their stock reasonably stable they will have to discard each year the equivalent of the productions of perhaps 2 or 3 years in the past, to make space for one year's current intake. If a library proceeded on these lines for long enough, eventually the intake of one year would be almost equal to the entire existing stock. Microforms and interlibrary loans are two ways of reducing the problem but they do not yet offer a full solution.

File size can pose problems for retrieval. Automation can rapidly reduce the time and cost of access, but the handling of large files, although it is being improved through technological advances still needs much study. Theoretically, retrieval tools can cope with any foreseeable growth, but the means of doing so may not suit producers and users equally well.

5.4 Assessment of bibliometric data and relevance to system design

Size, production, and growth data is only one of several types of bibliometric data which can be used in bibliographical system design. Other types of data include use data and demand data, citation data and coverage and overlap data derived from indexing and abstracting services.

Data on the size and production of the literature base is required (i) to assess total coverage and file size of a subject, (ii) as a yardstick for costing and budgeting calculations, and (iii) for dealing with the relative allocation of resources. Size data does not appear to have contributed much in the past to system design.

A knowledge of the nature and rate of literature growth is useful in bibliographical system design for prediction and regulation. Growth in resources devoted to bibliographical tasks should increase at least in proportion to the minimum rate of literature growth. The difficulty is in choosing the most meaningful rate of growth for the literature (e.g. production of serial or monograph titles, words, pages, articles, etc.) relating to the activity in question.

Information on the subject, language and geographical distributions of literature is of obvious importance to understanding the present status of information services and for making proposals for development. In any other area of social and economic activity, ignorance of the basic characteristics of the resources available would rightly be viewed as a serious impediment to progress and understanding. However, it is only recently that bibliographers have made a concerted effort to assess the basic parameters and distributions of the information resource in statistical terms, and to consider the detailed implications for management and design. It is hoped that the present report, in reviewing the progress of research so far, and in contributing an insight to the situation in the social sciences, will help to stimulate a more intensive and purposeful phase of enquiry than has hitherto been the case.

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Appendices

APPENDIX A

SUBJECT HEADINGS: GUIDELINES FOR SUBJECT COVERAGE OF SERIAL TITLES ON CLOSSS FILE

Subject categories.	Guidelines for sub-areas to be included.
Social and behavioural science.	for a serial publication covering all or several disciplines.
Anthropology.	cultural, economic, political, social and applied anthropology, as well as ethnography and ethnology.
Criminology.	relationship of law to the other social sciences, criminology, penology.
Economics.	econometrics, the history of economic thought, economic development, agricultural economics, industrial organisations, international economics, labour economics, money and banking, public finance.
Education.	pedagogy, philosophy of education, methods and technique, curriculum development, educational training.
Environmental planning.	town and country planning, ecology.
Ergonomics.	the relationship between man and his physical environment, heat, light, noise, vibration, man-machine interfaces, human biology, architecture and the use of buildings, vigilance and inspection.
Futurology.	social predictions and forecasting.
Geography.	cultural, economic, political and social geography, not physical geography.
History.	primarily social and economic history.
Linguistics.	general, applied and social linguistics, semantics, semiology.
Management.	management techniques, personnel, O & M, systems analysis.

Political science.	public administration, public law, international relations and peace research, comparative politics, political theory, the study of policy making, political behaviour.
Psychology.	clinical counselling, educational, experimental, personality, social, industrial and applied psychology, and social psychiatry.
Social policy and social Administration.	social work, social-problem-orientated studies (e.g. poverty), professional training for social workers. Social medicine, leisure.
Sociology.	economic, organisational, political, rural and urban sociology, the sociologies of knowledge, law, religion, and medicine. Human ecology, the history of social thought. Sociometry and other small group research, survey research, mass communications, demography.
Statistics and research methodology.	the design of experiments and other forms of data collection, sample surveys, government statistics, and the use of statistical methods in social science research, methods of social science research, operational research.

This table was reproduced in the data collection manual prepared for students. One of the main purposes of this fairly detailed, although somewhat 'ad-hoc' list, was to ensure that data collectors were reminded of some potentially relevant areas which might otherwise have been overlooked.

APPENDIX B

DISISS WORKING PAPER No. 7

A microfiche copy of DISISS Working Paper no. 7 is presented with this report, attached to the inside of the back cover.

A number of tables and figures which appeared in the working paper are referred to in the text of the present report and are reproduced in the main body of tables and figures (as Tables 71 to 76, and 80 to 86; and as Figures 16 to 28). The remainder of the figures from the working paper are listed as supplementary figures, and follow on from the main figures, with Working Paper no. 7 numbering. A number of other tables from the working paper, dealing with growth rates and projections are listed as supplementary tables, and follow on the main tables, with Working Paper no. 7 numbering.

Reanalysis of data since the publication of the Working Paper has necessitated revision of the projections of literature size due to an error in graph plotting. The reader interested in those figures and tables in the working paper dealing with projections of size is thus referred to their revised equivalents in this report.

An index to the tables and figures is as follows:

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ERRATA TO MICROFICHE VERSION

Page 76, line 13, should read, ...'It is questionable...'
Page 77, line 16, should read, ...'growing exponentially;'
Table 11, data line1, cols 7 and 8, should read, '... 660000, 760000...'
Table 11, data line 2, col 8, should read, '... 730000...'
Table 17, See supplementary tables in this report
Table 21, data line 4, col 2, should read, '... 177.6...'
Table 29, data line 5, col 12, should read, '... 25784...'
Table 65, data line 1, col 12, should read, '... 72633...'
Table 65, data line 2, col 12, should read, '... 74837...'
Table 81 data line 1, col 12, should read, '...72633...'
Table 81, data line 2, col 12, should read, '...74837...'
Table 81, data lines 1 and 2 recalculated percentages should read as follows. Line 1 (1965): class 2, 6.2; class 4, 6.8; class 5, 24.9; class 8, 14.2; class 9, 3.6; class 10, 1.0; class 11, 9.9; class 18, 10.5; class 22, 6.3; class 23, 16.6. Line 2 (1966): class 2, 6.2; class 4, 6.8; class 5, 25.1; class 8, 15.6; class 9, 3.6; class 10, 0.9; class 11, 9.4; class 18, 9.8; class 22, 6.4; class 23, 16.2.

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Table number	Title
45	Spain book production: annual percentage change in size.
46	Spain book production: subject composition by main classes.
47	India book production: size by main subject classes.
48	India book production: annual percentage change in size.
49	India book production: subject composition by main classes.
50	Netherlands book production: size by main subject classes.
51	Netherlands book production: annual percentage change in size.
52	Netherlands book production: subject compostion by main classes.
53	Poland book production: size by main subject classes.
54	Poland book production: annual percentage change in size.
55	Poland book production: subject composition by main classes.
56	Yugoslavia book production: size by main subject classes.
57	Yugoslavia book production: annual percentage change in size.
58	Yugoslavia book production: subject composition by main classes.
59	Italy book production: size by main subject classes.
60	Italy book production: annual percentage change in size.
61	Italy book production: subject composition by main classes.
62	Book production of the top 12 producers (1969): comparison of production in 1960 and 1969 by subjects.
63	Social sciences (class 3) as a percentage of annual book production in the top 12 countries.
64	Summary of subject composition data for top 12 producers (1960-1970).
65	Social sciences book production: top 12 producers.

Table number	Title
66	Social sciences book production: top 12 producers. annual percentage change in size.
67	Social sciences book production of the top 12 producers: summary of growth data.
68	Book production in the social sciences: annual change 1965-1970 (index numbers).
69	USSR social sciences book production: size and annual percentage change in size.
70	USA social science book production: size and annual percentage change in size.
71	Federal Republic of Germany social science book production: size and annual percentage change in size.
72	UK social science book production: size and annual percentage change in size.
73	Japan social science book production: size and annual percentage change in size.
74	France social science book production: size and annual percentage change in size.
75	Spain social science book production: size and annual percentage change in size.
76	India social science book production: size and annual percentage change in size.
77	Poland social science book production: size and annual percentage change in size.
78	Yugoslavia social science book production: size and annual percentage change in size.
79	Italy social science book production: size and annual percentage change in size.
80	Ranking of book producing countries in 1969.
81	Social science book production: top 12 producers subject composition.
82	UNESCO 'new' subject classification.
83	United Kingdom book production: size (based on UNESCO data).
84	United Kingdom book production: size (based on *Bookseller* data).
85	United Kingdom book production: size (based on *BNB* data).
86	United Kingdom book production: summary of growth data.
87	United Kingdom book production: annual percentage change in size. (Based on *BNB* data).

Table number	Title
88	United Kingdom book production: annual percentage change in size (based on UNESCO data).
89	United Kingdom book production: annual percentage change in size (based on *Bookseller* data).
90	Generalized subject groupings for *BNB* data on United Kingdom book production.
91	United Kingdom book production: size by main classes.
92	United Kingdom book production: annual percentage change in size.
93	United Kingdom book production: subject composition by main classes.
94	United Kingdom book production: summary of growth data.
95	Classification of the social sciences based on *British National Bibliography*.
96	United Kingdom social sciences book production: size and annual percentage change in size (based on *BNB* data).
97	United Kingdom social science book production: size.
97A	United Kingdom social science book production: subject composition.
98	United Kingdom social science book production: annual percentage change in size.
99	United Kingdom social science book production: summary of growth data.
100	United States of America social science book production: size and annual percentage change in size.
101	Book production in United States of America: size and annual percentage change in size (based on UNESCO data).
102	United States of America book production: summary of growth data.
103	Generalized subject groupings for *ABPR* data on United States book production.
104	United States of America book production: size.
105	United States of America book production: annual percentage change in size.
106	United States of America book production: size by main classes.
107	United States of America book production: annual percentage change in size.

Table number	Title
108	United States of America book production: subject composition by main classes
109	United States book production: summary of growth data.
110	Generalized subject grouping for *ABPR* and *BNB* (*ABPR* - Compatible) data on United States and United Kingdom book production.
111	United Kingdom book production: size (*ABPR* - Compatible data).
112	United Kingdom book production: annual percentage change in size.
113	United Kingdom book production: size by main subject classes (*ABPR* - Compatible data).
114	United Kingdom book production: annual percentage change in size by main subject classes (*ABPR* - Compatible data).
115	United Kingdom book production: subject composition by main classes (*ABPR* - Compatible data).

APPENDIX C

METHOD OF STUDY FOR INVESTIGATION OF CHANGES IN SIZE OF SOCIAL SCIENCE JOURNALS 1920-1970

Selection of sample

Twenty serials were chosen to provide evidence of growth and to enable an assessment to be made of the various methods by which growth and size may be calculated. A list of the titles studied is provided in Table 87. No claim for representativeness can be made for the sample - it is too small, and titles were not selected on a random basis.

Serials were chosen on the following grounds:

1. The serial was a journal. This ensured that the sample would be relatively homogeneous, so allowing valid comparisons to be made. In addition, the selection of journals meant that both information numbers and length of articles could be gathered.
2. The journal was current in 1974.
3. The journal was in existence before 1936. This made it possible to collect data over 40 years or so. (Originally it had been intended to use journals which were alive before 1930, but this proved too stringent a criterion.)
4. The journal was of high status, as judged by number of citations received. Ideally, journals of all 'levels' should have been used, since changes in size may be different for 'core' and 'fringe' journals, but the limited time available made this impossible. It was therefore decided to concentrate on high status journals, as being of relatively greater importance and as forming a more homogeneous group. There was also the practical advantage that 'core' journals were easier to locate in the long run.

'Core' journals were identified by reference to the ranked list of the most heavily cited social science journals produced in the earlier stages of DISISS. It should be pointed out that while a journal may enjoy a high status today, it may not necessarily have always held this status.

It was initially intended that

represent each of the major social science disciplines. Unfortunately, this was not entirely possible; surprisingly few current journals existed prior to 1936, and those that did were not evenly distributed throughout the social sciences. Several subject areas were thus either unrepresented or only poorly represented in the sample. Social welfare, for example, has no representation whatsoever.

It was not possible to collect data from every year because of the limited time available. Up until 1960 the sample time interval was five years, and after this date recordings were taken every two years. Recent changes in size are of more value for immediate forecasting and, because of the problems met in making retrospective comparisons, conclusions based upon recent data are likely to be more valid, especially in view of the relative youth of many social science disciplines.

Information collected

The following information was gathered for each sample year:

(1) Total number of pages
(2) Total number of articles
(3) Changes in content, frequency of issue, and other characteristics such as format.

Total number of pages

Collecting this information was relatively straightforward. It was only when supplements were present that problems occurred, since a large special supplement in one year of a journal can distort the whole pattern. Supplements were regarded as being part of the journals output for the year and were thus included in the count. Pages were counted regardless of their content, since rejection of any category of material would have been somewhat arbitrary and might have prejudiced certain groups of journal or particular subjects. Page dimensions did not vary greatly between journals, and so are not likely to have had any significant influence upon the results.

Total number of articles

It is not easy to define 'article' in an entirely satisfactory way, particularly as social science journals appear to have a wider range of contents than science journals, and categories of item are not clear-cut. For the purpose of this study, the following criteria were used.

An article should be:

(i) A literary composition

(ii) A self-contained comment on a specific topic

(iii) Of a certain size and substance. A couple of lines or a paragraph would not be regarded as an article.

In practice, the most immediate method of recognition was to see if an author statement was present. While an item without an author statement would not necessarily be discounted, an item with this statement is likely to be an article.

Letters, 'communications', news items, obituaries and book reviews were excluded from the definition. However, if a book review or obituary was given article treatment, as is sometimes the case, it was counted as an article. Conference papers and research reports were judged to be included in the definition.

It is easier to recognise articles in some subjects and forms of journal than others. For example, psychology journals follow the relatively straightforward pattern of science journals, while in sociology current news reporting and personal comment complicate the situation considerably.

Counting articles is generally conducted through the contents list, when one is present. This considerably speeds up the operation although the extent to which it does is determined largely by the organization of the list and the amount of detail provided. An ideal contents list, not only from the viewpoint of the data collector but also of the reader, would be one in which:

(i) Multi-authorship is indicated by some form of reference.

The practice of some journals of providing multiple entry with no linking reference can lead to the same article being counted more than once

(ii) Articles are grouped separately. If articles are listed in one sequence with book reviews, letters, etc. counting may proceed slowly and, possibly, inaccurately. In addition the classification of items as articles should be checked as practice does differ between journals.

Changes in content, frequency of issue, etc.

Any changes that could affect or explain the page and article figures were carefully noted. A surprisingly high number of changes were noted, many quite significant in their effects. The most common change was that of frequency of issue. Six journals (35% of those studied) altered their frequency; interestingly, five of these were psychology journals, and four of them increased their frequency from four to six times a year. In most instances, although not all, change in frequency was accompanied by a significant rise or fall in the total number of pages. Thus in the interval 1925-30 the American Journal of Psychiatry changed frequency from quarterly to 6 times a year and also increased its number of pages by 57%. This increase was the largest recorded in the publishing history of the journal.

Changes in journal content were another factor that influenced the figures, in particular those for numbers of articles. Apart from a noticeable general increase in diversification of contents, several journals grew considerably from the increased coverage of book reviews alone, thus altering the ratio of total pages to pages containing articles. As an example the number of pages in an annual volume of Language rose by 83% between 1945 and 1950. This growth was not explained by an increase in article numbers or their length, but by an increase in coverage of book reviews. One journal , Man, underwent a complete transformation in 1966; it more than tripled its total number of pages and doubled its number of articles within the space of two years. This was due solely to the merging of two journals by the Royal Anthropological Institute, the publishers of Man. In another case, the Howard Journal of Penology on changing publisher in 1970, also increased its number of pages by 28% and its length by 70%. Both these cases serve to show the importance of understanding the instruments of change and the danger of using calculations based on averages, unless a very large sample is used.

APPENDIX D

INVESTIGATION INTO CITABILITY OF MATERIALS IN JOURNALS

Objective of work

In order to adjust citation rates over time to take account of the size of the citable journal literature (e.g. articles of various types), it is necessary to know which types of item actually receive citations. With this knowledge, the number of potentially citable items in journals can be counted for various dates to give estimates of the size of the citable literature.

Method

Preliminary data was gathered on the length (in pages) of all items in British Journal of Criminology (BJC) and American Sociological Review (ASR) for 1962-1972. Then, the 1971 volumes of these two journals were examined to see which items in the previous volumes (back to 1962) had been cited.

In addition 10 items (articles) were selected at random from 5 other journals in 1970 and citations to them checked in Science Citation Index and Social Sciences Citation Index (one part). The primary journals were American Journal of Sociology; American Economic Review; American Sociological Review; Social Forces and Journal of Social Psychology.

Results

Examination of BJC and ASR showed that items classified as 'articles' by the journals were 6- and 9- times (respectively) as likely to be cited as notes, comments, communications, etc.

Furthermore, the 'articles' cited were longer, on average, than all articles. (So also were the notes, etc.) These results appeared suspicious because only journal self-citations had been counted (thus the fact that the difference in mean length of article was highly significant statistically, cannot be too strongly accepted).

Examination of the sample of 10 articles from 5 journals once again showed a tendency for longer items to be cited more often than short items, in 3 out of 5 journals. However, very long items failed to attract many citations.

General remarks

There is so much variability present (i.e. in how many citations an item of a given length receives and in page sizes between journals in the sample) that any relationship between length and citability is heavily masked. The conclusion was drawn that a number of interesting questions arise from this work (e.g. why do long items not receive many citations?), but that the data we have do not support the view that number of pages in a journal is a better guide to its citability than number of articles.

Thus, although page length may be easier to collect, accurate citable item counts really require data on numbers of articles.

This conclusion is reinforced by the observation that a number of major journals (notably *ASR* and *BJC* - selected because of this) contain a good deal of material which is not generally cited - book reviews, notes comments, etc. Thus the use of page numbers would inflate the citability of these journals relative to journals that contained mainly articles.

In the interests of brevity, the data collected will not be appended here, but some simple descriptors may be valuable:

Number of pages	0-5	6-10	11-15	16-20	21-25	26-30	31-35	35+
5 journal sample	.2	1.4	2.13	5.44	2.0	1.0		
Am. Soc. Rev.	.31	.234	231	.264	1.6	1.0		
Brit. Jnl. Crim.	.33	.06	.15	.19	.15	0	.5	.66

[Entries are citations counted per article in the length range]

As can be seen the evidence is conflicting. It is probably necessary to undertake the analysis of *more* citations and to try and characterize the content of the very long articles (e.g. review/empirical work/theoretical) to see if their citation pattern can be explained.

There is evidence (strong in the case of *ASR*) that cited articles have a higher mean length (and greater variance) than all articles.

APPENDIX E

CORRELATION BETWEEN PAGE LENGTH AND NUMBER OF ARTICLES FOR SELECTED SOCIAL SCIENCE JOURNALS

	r
American Economic Review	.584
American Journal of Orthopsychiatry	.785
American Journal of Psychiatry	.476
American Journal of Sociology	.012
American Political Science Review	.685
American Sociological Review	-.412
British Journal of Educational Psychology	.686
Econometrica	.947
Economica	.631
Economic Journal	.716
Geography	.771
Howard Journal	.712
Journal of Psychology	.717
Journal of Social Psychology	.717
Language	.532
Man	-.004
Occupational Psychology	.683
Psychometrika	.630
Public Opinion Quarterly	.744
Social Forces	.647
Sociological Review	.323
Sociometry	.362

Source: Table 87 and Fletcher (1972)

APPENDIX F

LIST OF NEWS JOURNALS STUDIED

Title	Main subject area
Accountants Weekly (AC)	Economics
Age Concern Today (AG)	Social services
Business Week (BW)	Economics
Community Care (CC)	Social services
The Economist (EC)	Economics
Health and Social Service Journal (HS)	Social services
Labour Research (LR)	Politics
Management Review and Digest (MR)	Management
Municipal Journal (MU)	Public administration
New Law Journal (NL)	Law
Professional Administration (PA)	Management
Race Today (RT)	Sociology
SSRC Newsletter (SN)	Social sciences
Social Work Today (SW)	Social services
Taxes (TA)	Economics
Trade and Industry (TR)	Economics
Visual Education (VE)	Education
Works Management (WM)	Management

(All are published in the UK except Business Week)

Tables

TABLE 1

SUMMARY OF SELECTED STUDIES DEALING WITH SIZE, GROWTH AND CHARACTERISTICS OF THE LITERATURE IN THE SCIENCES AND SOCIAL SCIENCES

Author of study	Date	Scope	Empirical work undertaken	Main results
Institut Internationale de Bibliographie	1911	Size and growth of monograph and serial literature	Analysis of bibliographies and catalogues. Estimation where data lacking	Historical survey from the late 15th century down to 1908/1909. Data classified by country and some by subject.
Cole and Eales	1917	Size and growth of literature of comparative anatomy	Analysis of literature published from 1550-1860	Non linear growth, with peaks in 1680s and 1830s. Considerable variability and a steep decline in amount of literature recorded after 1835
Hulme	1923	Scientific literature	Analysis of International Catalogue of Scientific Literature 1901-1913 and patent statistics	Data on number of articles and journals and distribution by subject and country change in ranking of subjects over period.
Sherrington	1934	Language distribution of scientific periodicals	Analysis of World list of scientific periodicals	Of c. 36,000 serials listed, 13,494 had English as a main language, 6,186 German, 5,013 French, 1,833 Russian, and 1,667 Italian.
Ridenour and Shaw	1952	Size and growth of literature and implications for libraries	Analysis of secondary data	Various evidence presented for exponential growth of literature and other phenomena. Review of mechanical and electronic aids to documentation and bibliography then available.
UNESCO	1954	Size of monograph literature and numbers of translations	Analysis of UN secondary statistics	Data on book title production from late 1930s to 1954
Price	1956	Size and growth rate of scientific literature	Estimate of no. of journals and secondary services	Scientific literature growing exponentially since 1660

Author of study	Date	Scope	Empirical work undertaken	Main results
Conrad	1957	Biology literature	Analysis of rate of growth of serial titles.	Accelerating growth in number of titles See Conrad (1963).
Louttit	1957	Psychology literature	Analysis of sample of items in Psychological Abstracts 1894-1954	Size, growth and change in characteristics of subject areas within psychology. Increasing importance of English language material.
Barker	1958	Size and characteristics of monograph literature	Analysis of UN secondary statistics	Quantitative assessment of the book trade (production; production per capita, language and country distribution; size of edition; imports and exports)
Bourne	1962	Number of scientific and technical papers published	Used a wide range of supporting data. Assumed 30,000 journals current and an estimate of 30 to 70 articles per journal	Up to c. 1960 12 million to 15 million papers published, increasing to rate of 1 million to 2 million a year
Machlup	1962	Scientific literature and knowledge	Analysis of secondary statistics	Estimated a growth rate of 4.1% for all periodicals from 1947-1958
Conrad	1963	Japanese scientific and technical periodicals	Growth of literature 1877-1962	Three periods of growth: (i) 1877-1920 slow steady increase, (ii) 1920-1946 initial increase then fall-off (iii) post-1946 rapid growth. 70% of all serials published since 1946.
Gottschalk and Desmond	1963	Size, growth and characteristics of current scientific serials. Serious attempt to establish number of major scientific journals currently issued.	Analysis of comprehensive and recent serials bibliographies at world level. Fairly rigid definition of scientific serial.	Produced a lower estimate of size and growth rate of scientific serials than hitherto, based on the World List - about 35,000 ± 10% rather than c. 50,000. Cautious about growth rate, but assumed that it had been exponential, but may not continue. Acknowledged growth more important in articles, pages and more frequent publication. Mortality rate of 40% suggested.
Price	1963	Size and growth rate of scientific literature.	Estimate of size and growth rate of various bibliographic and related phenomena.	Restatement and expansion of ideas in the 1956 paper. Exponential growth in the number of serials founded; data analysed does not take into account mortality rate. (cf. Gottschalk & Desmond 1963, Barr 1967).

Author of study	Date	Scope	Empirical work undertaken	Main results
Keenan and Atherton	1964	Physics abstracting	Analysis of Physics Abstracts (1961)	Age, author, form or material language, country subject and journal distributions for abstracts in PA.
Orr and Leeds	1964	Bio-medicine; size, growth and characteristics of literature	Wide range of data sources; bibliographies, libraries, publicationsgenerated by research grants	Number of substantive biomedical serials increased by 7.5% between 1950 and 1960; no. of papers published annually increased by 20.5% in same period.
Shilling et.al.	1964 and 1965	Pharmacology; toxicology and cosmetics. Aquatic biology, pediatrics biochemistry and endocrinology	Construction of data file of serials and analysis of size, growth and other characteristics	
Conrad	1965	Bacteriology and biology literature	Analysis of bibliographies (e.g. Library of Congress) and abstracting services (e.g. Biological Abstracts)	Growth curves for new journals in science and technology (in US, USSR, Japan, Latin America) 1800-1959 by decades suggest non-linear growth. Growth curves for biological journals in US (1790-1950); USSR (1861-1950); Japan (1877-1930) and Latin America (1864-1960). Data on language and subject distributions. Current production of biology journals in 1963 by country of origin.
Escarpit	1966	Book production and publishing; socio-cultural aspects	Analysis of secondary statistics	
ICSU/AB	1966	Major journals covered by secondary services in physics	Analysis of characteristics and content of 107 titles	Accelerating growth trend 1910-1962
May	1966	Mathematics literature	Analysis of papers in Jahrbuch über die Fortschritte der Mathematik and Mathematical Reviews (1941-)	From 1868 to 1965 growth rate of mathematical papers published estimated at 2.5% per year; deviations from exponential curve clearly related to war, depression and recovery. Exponential growth confirmed but at about half the rate found by Price and other investigators. Importance of long time series and effect on exponential growth rate stressed.

Author of study	Date	Scope	Empirical work undertaken	Main results
Barr	1967	Scientific and technical periodicals	Analysis of serials holdings at British Library Lending Division [Formerly NLLST]	Reported some 26,000 major scientific and technical journals current. Estimated a mortality rate of c. 40% (cf. Gottschalk & Desmond, 1963), but not an annual mortality rate.
Lengyel	1967	Social science press in selected countries. Social science journals	Questionnaire survey to national rapporteurs involved in production of WLOSSP 3rd edition	Mostly description of characteristics. Insufficient data to construct time series of any length but number of serials recorded in WLOSSP grew from 678 in 1951 to 913 in 1955, 1295 in 1963 and 1358 in 1966. In 4th edition (1974) 2662 titles listed.
Stoddart	1967	Geography: growth and structure of the subject	Growth of periodicals, geographical societies and numbers of UK and US higher degrees	From 1750-1960 number of geographical serials doubling in 30 years; compared with Price (1962) estimate of doubling of all serials in 15 years. Exponential growth recognised in all three parameters.
Bryan	1968	Size and growth of production of serials and monographs	Analysis of secondary statistics and some purpose collected estimates	Estimated growth rate of about 4% per year for 'worthwhile' monographs and serials; about 225,000 'worthwhile' monographs, and 126,500 serials current in 1968. Concluded that 'information explosion' having greater effect on users rather than processors.
Holt and Schrank	1968	Economics and comparative data on psychology, biology, physics and electrical engineering	Analysis of major bibliographies	Estimated number of items published up to points of first observation on time series (1883 (Econ), 1903 (Elec Eng., Physics), 1927 (Psychol, Bio.)). Exponential annual growth rates observed; Economics 5.5%; Biology 4.4%; Physics 3.7%; Elec. Eng 3.5%; Psychol 2.9%. Did not expect saturation to occur in the near future.
Vickery	1968	Number of scientific and technical articles published	Estimates based on measurement at NLLST. Data broken down by major disciplines	Production of some 850,000 scientific technical articles in 1965
Anthony, East and Slater	1969	Physics: size, growth and characteristics of the literature	Analysis of Physics Abstracts/ Science Abstracts A and other studies and sources	Related size, growth and characteristics of physics literature to growth in other areas of science. Exponential growth in cumulative no. of abstracts 1920-1968. Non-linear growth with fluctuations, in no. of papers published per year. Linear growth in no. journals currently scanned 1920-1968. Suggest that saturation may be occurring in no. of current journals.

Author of study	Date	Scope	Empirical work undertaken	Main results
Cooper and Thayer	1969	Physics literature	Analysis of 491 journals covered by Physics Abstracts	Data on characteristics of journals (sponsorship, country of origin, language, frequency, etc.) 80.2% journals published mainly in English and 36.5% in 2 or more languages.
Raffel and Shisko	1969	Science and social science serials	Analysis of data in Publishers Weekly	In the USA numbers of social science serials increasing at a slightly faster rate than scientific serials
Beck	1970	Documentation, literature, scientific manpower and funds in USSR	Analysis of published statistics	In spite of growth in publication, manpower and finds productivity of authors showed a tendency to decline
Clayton	1970	Geography literature	Analysis of bibliographies.	Annual output of between 10,000 and 20,000 papers in geography. Problems of communication arising from size and growth of literature.
Foo Kune	1970	Japanese scientific and technical periodicals	Analysis of English language material contained in them.	Number of current scientific and technical periodicals rose from 1,675 in 1957 to 4,929 in 1967. Accelerating growth. Diminishing trend of European language content.
Goil	1970	Social sciences literature	Analysis of secondary statistics (UNESCO) and secondary services, (e.g. IBSS)	Size, growth and characteristics of literature. Suggests that growth in coverage of secondary services is not keeping pace with growth of literature.
Herring	1970	Scientific serials in the US, communicating original work	Calculation of growth, birth and mortality rates	Mortality rate of US journals very small (less than 1% p.a.) less than non-US journals. Current birth-rate c. 2.5%p.a.; commercial journals 8%p.a. and non-profit journals 1.4%p.a. Also that size of individual journals doubling every 10 years (equal to 7% p.a).
Baker	1971	Chemistry literature	Analysis of journal coverage of Chemical Abstracts	Reported on annual growth rate for the chemical literature of 8%-9%.

Author of study	Date	Scope	Empirical work undertaken	Main results
Berg	1971	Economics literature	Analysis of economics journals	Data on circulation (subscriptions) and words/cent.
Coblans	1971	The literature 'explosion'	Use of Martyn and Gilchrist (1968) data plus other secondary data	Myth of overloaded and collapsing libraries of the 1950s based on misconceptions. Importance of 'core' literatures. 90% libraries. Large amount of duplicated and redundant material.
Jablonski	1971	Biomedical literature	Analysis of (i) Index Catalogue and (ii) Index Medicus	(i) Grew from 2300 to 10499 titles 1880-1948; after redefinition of scope (ii) contained 2400 titles in 1939, when MEDLARS tapes contained 1 million citations.
Hokkanen	1971	Book production in USA.	Analysis of statistical data in Bowker Annual 1880-1970	Exponential growth observed post-1955. Previously linear trend with considerable variability.
Menard	1971	Growth of scientific literature, especially geology	Analysis of journals, bibliographies and citation patterns	Results show importance of detailed studies for revealing intra-subject differences and fluctuations in production. Regards citation decay as good estimator of literature growth curve.
Pritchard	1971	Computer literature	Analysis of bibliography	Growth trends in a relatively new subject area. Description of journal literature
Barr	1972a	Book production	Analysis of secondary statistics: UK, US and non-English production	Constant rate of growth at about 3% per year.
Barr	1972b	Geographical distribution of serial publications.	Analysis of stock of British Library (Lending Division) in August 1971	Of 36,599 serials currently in stock, 11,766 were from W. Europe: 7,285 from USA, 5,593 from E. Europe, 4,789 from UK, 3,165 from Asia, 1,578 from S. America, 18,118 from Australia, New Zealand and Canada combined, and 575 from Africa.

Author of study	Date	Scope	Empirical work undertaken	Main results
Fletcher	1972	Economics: size, growth and characteristics of literature.	Monographs: Analysis of London Bibliography of the Social Sciences	Monograph growth rate of 1.9% per year 1928-1958
Rogers	1972	Acquisition of foreign publications.	Uses secondary statistics of size and characteristics to investigate requirements of acquisition policies	Attempt at quantification to assist development of acqusition policies for non-English materials in UK libraries
Taubert	1972	Book production and book trade organization	Analysis of secondary statistics	Geographical treatment. Data on size, but very little data on growth. Observes knowledge of size, growth and characteristics is poor. Estimates that 8% of book production is based on translations and that 20% is in paperback (does not specify titles or copies).
Vebra	1972	Book production in USA and USSR	Analysis of bibliographies and secondary statistics	Effect of using different criteria for book title production estimates from USA and USSR
Anderla	1973	Scientific literature, manpower and funds.	Forecasts of future size of literature, etc. Various models used. Discussion of techniques of prediction and extrapolation. Wide range of sources discussed.	Concludes that all forms of scientific literature (particularly; proceedings, technical reports, preprints, articles) growing exponentially. Suggests that technological literature growing more rapidly than pure science literature. Estimates that some 10 millions to 12 millions persons involved currently on generating scientific and technical information.
Lovell	1973	Economics literature	Analysis of Index of Economic Journals	Economic articles; 5.05%p.a. growth rate from 1886-1965 with doubling period of 13.7 years. Economic journals; 1850/1893-1969 3.8% and 4.2%p.a. growth rate and doubling periods of 18.3 and 16.4 years respectively.
Sengupta	1973	Biochemistry literature	Analysis of World List of Scientific Periodicals	Exponential growth 1870-1960; suggests that growth has continued post-1960.
Warren and Goffman	1973	Schistosomiasis literature	Analysis of major subject bibliographies	Exponential growth observed of schistosomiasis literature from 1852/1852-1962. In 110 years studied, 3% of literature produced in first 50 years and 40% in last 10 years.

Author of study	Date	Scope	Empirical work undertaken	Main results
Ashworth	1974	Scientific literature		Recent restatement that 'information explosion' may be at critical phase; prelude to stability and saturation.
Meadows	1974	Scientific literature	Reanalysis of wide range of empirical studies	Review of evidence for continued growth, saturation and levelling off
Sengupta	1974	Physiology literature	Analysis of *World List of Scientific Periodicals*	Non-linear growth observed in journals in the field of physiology from 1796-1968
Sengupta	1974	Microbiology literature	Analysis of *World List of Scientific Periodicals*	Linear growth in number of journals 1880-1968
Vebra	1974	Amount of reading material in book form printed yearly in USSR and USA	Investigation of whether book, volume or printers sheet is the most suitable measure of literary output. Analysis of bibliographies.	Comparative size and growth data on social sciences, humanities, and science and technology measured in volumes and printers sheets at 1959, 1965, 1966, 1970 and 1971

TABLE 2

NUMBER OF SERIALS OF VARIOUS CATEGORIES CURRENTLY PUBLISHED IN THE WORLD.

Category (UNESCO)	Crude data				Crude data plus estimates				
	Number of titles	Number of countries	Time Period	Notes	Number of titles	Number of countries	Time Period	Countries for which estimates made	Origin of estimate
(i) Daily Newspapers[1]	6680-8050	118	1970	a	6680-8050	118	1970	Not estimated	-
(ii) Non-daily general interest newspapers[2]	33920	159	1965-1971, but mostly data refers to 1970 and 1971	b	33920	159	As for crude data	Not estimated	-
(iii) Other periodicals[2]	110190	150	1970	c	123220	152	1968-1970, and 1973 estimates	Germany (Fed. Rep.)	9526 titles listed in Willings Press Guide (1968). In 1968 c.1200 category (i) and (ii) items published.
								United Kingdom	4706 titles listed in Woodworth (1973). Includes all current UK serials (excluding certain types e.g. parish magazines) and includes some which would be considered as category (ii).

Source: UNESCO Statistical Yearbook (1972)

[1] Table 9.1

[2] Table 9.2

Notes:

a Not of prime interest to this study.

b & c Countries for which an estimate would be required to raise total covered to 169.

b Comoro Is; St Helena; Panama; Chile; Burma; Japan; Maldive Is; Belgium; Monaco; French Polynesia.

c Sao Tomé; Antigua; Canal Zone; Haiti; Neth Antilles; St Kitts-Nevis; Trinidad & Tobago; Virgin Is (USA); Venezuela; Macao; Yemen; Germany (Fed. Rep.); Gibraltar; United Kingdom; Solomon Is (UK); Nauru; Norfolk Island; Tonga; W. Samoa;

TABLE 3

ESTIMATES OF THE CURRENT TOTAL PRODUCTION OF THE SOCIAL SCIENCE SERIAL LITERATURE

Source	No. titles	Time Period	Geographical extent	Conditions of interpretation
1. CLOSSS	3273	1970	World	Number of periodicals only (primary and secondary journals, excl. monograph series)
2. CLOSSS	3909[1]	1970	World	Total number of serials (periodicals and monograph series)
3. WLOSSP	2662	1973	World	'Scientific' primary periodicals only. Excludes periodicals which furnish material fór the social sciences. Excludes wide related subject areas; e.g. psychology, law, history, geography, philosophy.
4. Ulrich (15th edition)	21600	1973	World	Information on social science titles extracted from Ulrich according to definition of social sciences used in CLOSSS.
5. UNESCO Statistical Yearbook (1972)	c.27000	1968-1971	World	Table 9.3 Available data, supplemented with estimates (see page 50for details). Basically, used a factor of 30% as representative of a country's production of social science titles; although in some cases used WLOSSP data.
6. British Library Lending Division (BLLD)	c.10000	1973	World	Number of social science titles held in stock or on order. Total includes some titles which have ceased publication.

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[1] Final file (1974) = 3909 current titles, [illegible]28 previous titles, 1595 discontinued titles.

TABLE 4

SUBJECT DISTRIBUTION OF CURRENT SOCIAL SCIENCE SERIAL LITERATURE

Subject	CLOSSS							Ulrich	
	No. titles current (1970). Titles with one subject code only.	Percentage share based on single code	Once coded (1)	Coded with one other subject (2)	Coded with two other subjects (3)	Sum of occurrence of codes singly or in combination	CLOSSS percentage recalculated for Ulrich comparison (N=2665)	No. titles (1974)	Percentage share
Social sciences (General)	236	8.55	236	40	8	284	8.85	2212	10.30
Anthropology	70	2.53	70	33	9	112	2.62	550	2.56
Archaeology	23	0.83	23	13	5	41	-	-	-
Architecture	14	0.50	14	26	5	45	-	-	-
Criminology	31	1.12	31	9	0	40	-	-	-
Economics	711	25.76	711	225	42	978	26.67	5716	26.63
Education	286	10.36	286	94	6	386	10.73	2500	11.64
Environment	66	2.39	66	65	11	142	2.47	437	2.03
Ergonomics	8	0.28	8	3	1	12	-	-	-
Futurology	5	0.18	5	1	1	7	-	-	-
Geography	118	4.87	118	42	11	171	4.42	650	3.02
History	58	2.10	58	40	7	105	2.17	900	4.19
Law	135	4.89	135	41	2	178	5.06	862	4.01
Librarianship	60	2.17	60	9	0	69	2.25	637	2.96
Linguistics	142	5.14	142	70	3	215	5.32	475	2.21
Management	72	2.60	72	41	9	122	2.70	425	1.98
Philosophy	14	0.50	14	11	1	26	-	-	-
Political Science	270	9.78	270	158	18	446	10.13	3686	17.17
Psychology	177	6.41	177	47	28	252	6.64	325	1.51
Social work	131	4.74	131	70	13	214	4.91	1086	5.06
Sociology	104	3.76	104	77	24	205	3.90	725	3.37
Statistics	29	1.05	29	13	3	45	1.08	275	1.28
TOTALS	2760	(100)	2760	1128	207	-	(100)	21461	(100)

TABLE 5

SUBJECT COMPOSITION OF WORLD[1] AND UNITED KINGDOM[2] CURRENT SOCIAL SCIENCE SERIAL LITERATURE

World			United Kingdom		
Subject class (UNESCO)	No. titles	Percentage	Subject classes UDC	No. titles	Percentage
2. Philosophy; Psychology	568	2.9	1 13-18	56	5.0
4. Sociology; Statistics	1525	7.8	30, 31	49	4.4
5. Economics; Political science	4856	24.7	32, 33	112	10.1
8. Education	3408	17.4	37	192	17.4
9. Commerce	2096	10.7	38	152	13.6
10. Ethnography	566	2.9	39	18	1.6
11. Linguistics	790	4.0	4	36	3.2
18. Management	2802	14.3	65	253	22.7
22. Geography	1023	5.2	91	12	1.0
23. History	1629	8.3	92-99	225	20.4
TOTAL	19263	(100)		1105	(100)

[1] 76 countries; excluding USA, UK, Canada, Federal Republic of Germany and 9 other countries in the top 45 group of book producers.

[2] Using a comparative assessment of UDC and UNESCO classifications.

Source: UNESCO Statistical Yearbook (1972) Table 9.3
Woodworth (1973)

TABLE 5

SUMMARY OF SELECTED STUDIES DEALING WITH SIZE, GROWTH AND CHARACTERISTICS OF SCIENCE LITERATURE

Subject/Study	Data source	
Biochemistry [Sengupta (1973)]	Analysis of World List of Scientific Periodicals	Accelerating (exponential) growth from 1870-1960. Period of rapid growth commenced 1900. Sengupta suggests that similar growth trend in output of titles continuing.
Biology [Conrad (1965)]	Biological Abstracts; Library of Congress bibliographies of scientific serials	Accelerating growth trends began in US c. 1986, and in Japan, USSR and Latin America between 1920 and 1940. Rapid growth continuing up to 1960 (latest data reported).
Chemistry [Baker (1971)]	Analysis of journal coverage in [illegible]ical Abstracts	Annual growth rate of chemical literature of 8% - 9%.
Earth sciences [Menard (1971)]	Geology	Presents various evidence for accelerating and exponential growth in the serial and other literatures in geology.
Medicine [Orr and Leeds (1963)]	Analysis of Biomedical Serials 1950-1960, and other bibliographies	Reported some 5700 substantive biomedical serials current at 1960/1961. Number of serials increased at 7.3% since 1950, but the rate could be as low as 3.5% of serials for which the data sources had only indefinite beginning dates were founded in 1950 or earlier. Births were largely outweighed by mortalities; the net gain was less than 38 serials a year. Collected data on physical size, number and length of articles.
Parasitology [Warren and Goffman (1973)]	Analysis of subject bibliography on schistosomiasis	Exponential growth 1852/1862-1962.
Physics. [Anthony, East and Slater (1969)]	Number of journals scanned by Physics Abstracts 1920-1968	Some 200 journals scanned in 1920 and 800 in 1968. Linear growth.
Physics [Keenan and Brickwedde (1968)]	Physics Abstracts (1965)	In 1965 Physics Abstracts published 32279 abstracts from 495 journals; 918 journals scanned in all. Divided journals covered into four zones, (i) high productivity, (ii) medium productivity, (iii) peripheral (iv) fringe, on basis of yield of abstracts. 247 titles from W. Europe; 101 from N & S America; 87 from Asia and Africa; and 60 from E. Europe.
Physics [ICSU/AB (1966)]	Group of 'major journals' covered by secondary services in physics (Member services of ICSU/AB)	Detailed study of characteristics and contents of 107 primary journals published in 20 countries; including data on number of articles (1964), length of articles (pages and words), and percentage of journal devoted to articles. Growth curve based on group of journal title shows an accelerating trend (1910-1962).
hysiology Sengupta (1971)]	Analysis of world list of scientific journals	Accelerating (exponential) increase in the production of journals in physiology 1796-1968. Rapid growth began c. 1880.
Science and technology [Gottschalk and Desmond (1963)]	Analysis of current serials bibliographies	Covered the natural and physical sciences, medicine and technology and included psychology and certain aspects of anthropology. Estimated 35,300 current scientific and technical serials (1961). In all cases technology forms the largest subject field (USA, 56%; Germany, 44%; Japan, 45%; France, 49%). Omitted house organs, promotional material, technical report literature in series and proceedings of international organization. Majority of counts based solely on the World List of Scientific Periodicals. Analysed growth rates by examining different issues of bibliographies, and by study of Library of Congress holdings in radioactivity, radiology and radiotherapy. Suggested that mortality rate has a counterbalancing effect on growth.
ience and technology arr (1967)]	Based on current holdings of British Library Lending Division (1965)	Reported that the BLLD collection then currently received c. 26,000 titles. Acquisition policy of BLLD is to obtain a copy of every scientific and technical periodical published.

TABLE 7

GROWTH RATE OF SOCIAL SCIENCE SERIAL TITLES

Sample	Time Period	Growth rate %p.a
World	1950-1970	3.35
UK	1950-1970	2.85
USA	1950-1970	3.01
France	1950-1970	3.14
Germany (Fed.)	1950-1970	2.78

Sample	Time period		
	No. of titles in 1970	Projections 1980	1985
World	3490	4852	5721
UK	1063	1408	1620
USA	867	1166	1353

Source: CLOSSS

TABLE 8

NUMBER OF CURRENT SERIALS RECORDED
ON CLOSSS 1820-1970

Year	No. serials	Year	No. serials	Year	No. serials
1970	3490	1944	1391	1918	647
1969	3380	1943	1370	1917	629
1968	3279	1942	1351	1916	611
1967	3169	1941	1325	1915	596
1966	3045	1940	1281	1914	582
1965	2923	1939	1262	1913	569
1964	2819	1938	1236	1912	554
1963	2723	1937	1205	1911	539
1962	2629	1936	1164	1910	523
1961	2551	1935	1134	1909	512
1960	2470	1934	1103	1908	490
1959	2397	1933	1067	1907	472
1958	2318	1932	1043	1906	455
1957	2247	1931	1020	1905	441
1956	2170	1930	993	1904	424
1955	2118	1929	963	1903	410
1954	2041	1928	939	1902	401
1953	1991	1927	906	1901	387
1952	1938	1926	870	1900	380
1951	1877	1925	836	1890	256
1950	1806	1924	811	1880	183
1949	1721	1923	778	1870	121
1948	1625	1922	753	1860	84
1947	1549	1921	737	1850	56
1946	1457	1920	694	1840	36
1945	1417	1919	661	1830	28
				1820	22

Source: CLOSSS

TABLE 9

PERCENTAGE OF SERIALS IN SELECTED SOCIAL SCIENCE SUBJECTS IN EXISTENCE
AT A GIVEN DATE (TITLES CURRENT IN 1970)

Subject (n= no. serials current; %= percentage of 1970 literature in existence)

Year	Anthropology		Economics		Education		Geography		Law		Linguistics		Pol. Sci.		Psychology		Social Policy		Soc. Sci. General		Sociology	
1880	4	5.71	39	5.48	7	2.44	11	9.32	10	7.40	7	4.92	12	4.44	5	2.82	11	8.39	17	7.20	6	5.76
1890	6	8.57	55	7.73	8	2.79	13	11.01	16	11.85	10	7.04	23	8.51	7	3.95	18	13.74	17	7.20	6	5.76
1900	9	12.85	84	11.81	13	4.54	19	16.10	21	15.55	10	7.04	34	12.59	10	5.64	25	19.08	23	9.74	8	7.69
1910	12	17.14	121	17.01	27	9.44	23	19.49	29	21.48	12	8.45	46	17.03	20	11.29	31	23.66	34	14.40	10	9.61
1920	14	20.00	167	23.48	48	16.78	31	26.27	43	31.85	14	9.85	59	21.85	26	14.68	42	32.06	44	18.64	13	12.50
1930	18	25.71	235	33.05	62	21.67	37	31.35	56	41.48	18	12.67	86	31.85	42	23.72	54	41.22	57	24.15	21	20.19
1940	26	37.14	308	43.31	72	25.17	49	41.52	71	52.59	26	18.30	120	44.44	62	35.02	67	51.14	77	32.62	33	31.73
1950	33	47.14	446	62.72	110	38.46	69	58.47	88	65.18	41	28.87	150	55.55	91	51.41	96	73.28	121	51.28	47	45.19
1955	40	57.14	487	68.49	125	43.70	80	67.79	97	71.85	51	35.91	176	65.18	106	59.88	101	77.09	152	64.40	57	54.80
1960	48	68.57	543	76.37	159	55.59	95	80.50	109	80.74	69	48.59	202	74.81	129	72.88	110	83.96	165	69.91	69	66.34
1965	64	91.42	633	89.02	216	75.52	108	91.52	120	88.88	105	73.94	229	84.81	153	86.44	122	93.12	204	86.44	84	80.76
1970	70	100.00	711	100.00	286	100.00	118	100.00	135	100.00	142	100.00	270	100.00	177	100.00	131	100.00	236	100.00	104	100.00

Source: CLOSSS

TABLE 10

GROWTH OF SERIAL TITLES IN THE SOCIAL SCIENCES

(Based on the number of current titles recorded in Ulrich 14th edition)

Year	Law		Sociology		Social Service and Welfare		Political Science general		International relat.		Civil Rights		Economics		Business & Indust.		Advertising		Comm. & Trade		Marketing		Public Admin.		Municip Gvt.		Social Science general		TOTAL	%
1790	1	0.2																											1	1%
1800	1	0.2																											1	1%
1810	1	0.2																											1	1%
1820	3	0.5																											3	1%
1830	4	1%											1	0.2					1	0.3									6	1%
1840	6	1%											1	0.2	2	0.3			1	0.3									8	1%
1850	8	1%			2	0.6							2	0.4	2	0.3			2	0.6							1	0.9	17	1%
1860	12	2%	1	0.4	2	0.6							3	0.6	3	0.5			3	0.9							1	0.9	25	1%
1870	18	3%	3	1%	2	0.6	1	0.1					6	1%	3	0.5			5	2%							1	0.9	39	1%
1880	23	4%	5	2%	2	0.6	1	0.1					9	2%	6	0.9			7	2%							1	0.9	54	1%
1890	34	6%	7	3%	2	0.6	6	0.8					14	3%	10	2%			19	6%	1	0.8					1	[illegible]	94	2%
1900	47	8%	12	5%	3	2%	13	2%	2	0.6			19	4%	27	4%			26	8%	1	0.8					4	4%	154	4%
1910	71	12%	18	7%	7	4%	23	3%	6	2%	1	2%	26	5%	44	7%	3	3%	44	13%	4	3%					4	4%	251	6%
1920	100	16%	21	9%	14	8%	38	5%	6	2%	1	2%	45	9%	72	11%	7	7%	65	19%	13	11%	17	13%			6	5%	405	9%
1930	155	25%	32	13%	21	12%	69	9%	15	5%	1	2%	74	14%	132	21%	16	16%	84	25%	21	18%	30	22%	43	34%	10	9%	703	16%
1940	218	36%	52	22%	36	20%	115	15%	33	10%	2	4%	98	19%	175	27%	28	28%	104	31%	28	23%	38	28%	48	38%	16	14%	991	23%
1950	308	30%	84	35%	76	42%	279	36%	89	27%	9	16%	185	36%	271	42%	40	40%	172	51%	43	36%	61	45%	71	56%	29	26%	1717	40%
1960	439	72%	144	60%	118	66%	452	59%	180	55%	19	35%	345	67%	422	66%	63	63%	252	74%	65	54%	88	65%	98	77%	56	50%	2741	64%
1969	613	100%	241	100%	180	100%	722	100%	330	100%	55	100%	515	100%	640	100%	100	100%	340	100%	120	100%	135	100%	127	100%	112	100%	4280	100%

Source: Based on beginning dates of current serials in Ulrich 14th edition.

TABLE 11

PSYCHOLOGY SERIALS CURRENT AT GIVEN DATES AS PERCENTAGES OF SERIALS CURRENT IN 1969/1970

	Sample of Titles			
Year[2]	CLOSSS (1970)		Tompkins & Shirley (1969)	
	n	%	n	%
-- 1880	5	2.8	14	2.7
1881-1890	7	4.0	27	5.2
1891-1900	10	5.6	46	8.9
1901-1910	20	11.3	63	12.1
1911-1920	26	14.7	90	17.3
1921-1930	42	23.7	134	25.8
1931-1940	62	35.0	190	36.6
1941-1950	91	51.4	253	48.7
1951-1955	106	59.9	306	59.0
1956-1960	129	72.9	379	73.0
1961-1965	153	86.4	475	91.5
1966-1970	177	100.0	519[1]	100.0

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[1] Tapering off in number of new titles probably due to delay in entering new items to bibliography before final publication.

[2] The CLOSSS data specifically represents the number of titles current in 1969/1970 existing at 1880, 1890 and at 10 year intervals through to 1970 (5-year after 1950). The Tompkins and Shirley data refers to the number of titles current in 1969 which were existing in any of the 9(4) years preceding the tenth (fifth) year interval. This difference in data recording (discrete for CLOSSS and continuous for Tompkins and Shirley) means that the two data sets are not strictly comparable, but they illustrate the point well enough, that both sets give a similar pattern for psychology serials.

TABLE 12

GROWTH OF SOCIAL SCIENCE PERIODICALS BY COUNTRY, LANGUAGE AND ISSUING BODY

	WLOSSP 1st edn (1951)	WLOSSP 2nd edn (1955)	3rd edn (1963)	WLOSSP 3rd edn revised (1966)	WLOSSP 4th edn not published (1974)
Eastern Europe[1]	38	40	108	113	177
France	57	77	90	93	199
German language[2]	46	66	73	75	172
Italy	47	67	84	89	134
Japan	14	75	79	79	111
Spanish language[3]	46	72	104	109	167
South Asia[4]	20	29	64	69	112
United Kingdom	63	62	87	95	163
USA	107	94	114	120	340
USSR	9	14	51	51	87
International organizations	13	15	24	24	29
Rest of world	231	362	491	516	971
TOTAL	678 (100)	913 (100)	1295 (100)	1358 (100)	2662 (100)

Source: World List of Social Science Periodicals, after Lengyel (1967)

[1] Bulgaria, Czechoslovakia, Poland, Yugoslavia

[2] Austria, Federal Germany, DDR

[3] Argentina, Mexico, Spain, Venezuela

[4] Ceylon, India, Pakistan

TABLE 13

MORTALITY RATES OF SOCIAL SCIENCE SERIAL PUBLICATIONS

(1) Deaths in 10-year intervals		(2) Death rates for selected years	
Period	No. of deaths	Year	Death Rate (%)
		1900	.555
1820-30	3	1905	.235
1831-40	8	1910	.195
1841-50	9	1915	.343
1851-60	8	1920	.302
1861-70	2	1923	.661
1871-80	4	1926	.24
1881-90	7	1929	.32
1891-1900	9	1932	.589
1901-10	5	1935	.181
1911-20	24	1938	.833
1921-30	28	1941	.78
1931-40	69	1944	.511
1941-50	110	1947	1.1
1951-60	65	1950	.93
1961-70	134	1952	.265
1971 +	9	1954	.3
		1956	.235
TOTAL	494	1958	.222
		1960	.375
		1962	.352
		1964	.477
		1965	.531
		1966	.31
		1967	.525
		1968	.537
		1969	.64
		1970	.235

Source: CLOSSS

TABLE 14

LONGEVITY BY SUBJECT: CURRENT SOCIAL SCIENCE SERIALS

Period	Subject All titles	Anth	Arch	Archit	Crim	Econ	Educ	Env	Geog	Hist	Law	Lib	Ling	Man	Pol	Psych	Soc Sci	Social	Sociol	Stat
Up to 4years	2.8	4.3	0.0	2.2	2.6	1.6	1.8	3.5	0.0	0.9	1.7	1.5	0.0	4.0	3.2	2.5	7.8	2.5	6.9	2.4
5 - 9 years	19.0	14.7	12.2	17.4	5.1	18.0	29.6	31.0	14.1	13.2	13.5	17.9	30.1	20.6	20.5	17.6	15.0	18.1	19.7	7.3
10 - 14 years	14.9	19.8	14.6	8.7	17.9	14.1	20.3	15.5	16.1	7.5	7.3	16.4	23.1	22.2	13.7	17.6	16.3	10.3	17.4	7.3
15 - 19 years	10.8	13.8	9.8	8.7	15.4	9.4	10.5	8.5	10.9	13.2	11.8	13.4	11.6	11.1	10.0	13.5	6.8	7.8	11.9	7.3
20 - 24 years	8.2	8.6	9.8	8.7	10.3	7.4	5.4	5.6	9.0	12.3	11.2	0.0	6.0	7.1	8.0	7.8	11.7	6.4	8.7	7.3
25 - 29 years	11.3	8.6	19.5	8.7	7.7	13.9	8.7	9.2	13.5	8.5	11.2	9.0	6.9	7.9	11.4	9.4	11.7	11.8	10.6	17.1
30 - 39 years	7.1	8.6	4.9	15.2	12.8	6.4	3.3	5.6	6.4	8.5	7.3	6.0	6.0	6.3	5.9	11.1	9.1	8.8	6.0	12.2
40 - 49 years	6.6	5.2	7.3	8.7	7.7	7.8	3.6	9.2	9.0	11.3	8.4	11.9	3.7	5.6	7.3	8.6	3.6	9.3	6.0	9.8
50 - 59 years	5.9	4.3	2.4	2.2	7.7	6.9	5.9	2.1	7.1	11.3	5.6	1.5	4.2	11.1	6.4	5.3	4.9	6.4	5.0	7.3
60 - 69 years	3.7	3.4	4.9	2.2	2.6	3.5	4.9	4.2	3.2	6.6	6.2	7.5	2.3	2.4	4.3	1.2	3.3	5.9	1.8	0.0
70 - 79 years	2.6	0.9	0.0	8.7	0.0	3.2	2.3	3.5	1.9	0.9	5.6	7.5	1.4	0.8	1.6	2.0	3.3	2.5	0.5	2.4
80 - 89 years	2.3	4.3	4.9	8.7	5.1	2.5	1.3	1.4	3.2	3.8	2.8	0.0	0.9	0.0	3.2	1.6	0.7	2.5	1.8	4.9
90 - 99 years	1.4	0.0	0.0	0.0	2.6	1.1	0.3	0.7	3.8	0.9	2.8	6.0	1.9	0.0	1.4	0.8	1.0	2.9	0.5	2.4
100 - 109 years	1.2	2.6	2.4	0.0	0.0	1.4	0.5	0.0	1.3	0.0	1.1	0.0	0.5	0.8	1.4	0.4	1.6	2.5	0.9	0.0
110 - 119 years	0.5	0.0	0.0	0.0	2.6	0.5	0.3	0.0	0.0	0.0	1.1	0.0	0.9	0.0	0.7	0.0	1.0	1.0	0.9	4.9
120 - 149 years	1.1	0.9	4.9	0.0	0.0	1.5	0.8	0.0	0.6	0.9	1.7	0.0	0.4	0.0	0.9	0.4	1.0	0.5	0.9	7.3
Over 150 years	0.5	0.0	2.4	0.0	0.0	0.7	0.5	0.0	0.0	0.0	0.6	1.5	0.0	0.0	0.0	0.0	1.3	1.0	0.5	0.0
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
	3661	116	41	46	39	943	389	142	156	106	178	67	216	126	438	244	327	204	218	41

Source: CLOSSS

TABLE 15

LONGEVITY BY SUBJECT: PROPORTION OF TITLES WITHIN DIFFERENT AGE GROUPS FOR CURRENT SOCIAL SCIENCE SERIALS

Age group	Subject All titles	Anth	Arch	Archit	Crim	Econ	Educ	Env	Geog	Hist	Law	Lib	Ling	Man	Pol	Psych	Soc Sci	Social	Sociol	Stat
9 years or less	21.8	19.0	12.2	19.6	7.7	19.6	31.4	34.5	14.1	14.1	15.2	19.4	30.1	24.6	23.7	20.1	22.8	20.6	26.6	9.7
14 years or less	36.7	52.6	26.8	28.3	25.6	33.7	51.7	50.0	30.2	21.6	22.5	35.8	53.2	46.8	37.4	37.7	39.1	30.9	44.0	17.0
24 years or less	55.7	61.2	46.4	45.7	51.3	50.5	67.6	64.1	50.1	47.1	45.5	49.2	70.8	65.0	55.4	59.0	57.6	45.1	64.6	31.6
49 years or less	80.7	83.6	78.1	76.3	79.5	78.6	83.2	88.1	79.0	75.4	72.4	76.1	87.4	84.8	80.0	88.1	82.0	75.0	87.2	70.7

Source: CLOSSS. Based on Table 14.

TABLE 16

FORMS OF SOCIAL SCIENCE SERIAL TITLE CURRENT IN 1970

Description of type	Number of titles in 1970	Percentage
Journals	2472	73.9
Fixed period report	313	9.4
Statistics	140	4.1
Abstracts	94	2.8
Monograph series	82	2.4
Yearbook	74	2.2
Conference proceedings	57	1.7
Bibliography	36	1.1
Indexes	22	0.7
Legal/legislation	10	0.3
Book reviews	8	0.2
Cases, case notes	7	0.2
Content lists	5	0.1
Research index	4	0.1
Accessions lists	4	0.1
Others	19	0.6
TOTAL	3347	(100)

Source: CLOSSS

TABLE 17

FREQUENCY OF PUBLICATION OF SERIALS
CURRENT IN 1970

Frequency	Number of titles	Percentage
1 issue per year	692	20.0
2 issues per year	255	7.3
3 " " "	201	5.8
4 " " "	963	27.8
5 " " "	35	1.0
6 " " "	278	8.0
7 " " "	5	0.1
8 " " "	35	1.0
9 " " "	35	1.0
10 " " "	46	1.3
11 " " "	37	1.1
12 " " "	530	15.3
13-23" " "	5	0.1
24-26" " "	44	1.3
27-51" " "	5	0.1
52 " " "	74	2.1
53+ " " "	3	0.1
Irregular	159	4.6
Issued every 2 years	11	0.3
Issued every 3 years	4	0.1
TOTAL	3466	(100)

Source: CLOSSS

TABLE 18

TYPES OF ISSUING BODY OF SOCIAL SCIENCE SERIAL TITLES CURRENT IN 1970

Category	Number of titles	Percentage
Associations, societies etc	1074	32.5
Commercial publishers	585	17.7
Government	437	13.2
Education institutions (University, colleges etc)	725	22.0
Political group	37	1.1
International organization	172	5.2
Business and industry	105	3.2
Private individual	47	1.4
Others	118	3.6
TOTAL	3300	(100)

Source: CLOSSS

TABLE 19

NATURE OF CONTENTS OF SOCIAL SCIENCE SERIALS CURRENT IN 1970

Type of material	Occurrence of codes						Percentage based on single occurrence
		With between 1 and 5 or more other codes					
	Singly	(1)	(2)	(3)	(4)	(5)	
Articles	559	810	830	338	96	40	58.3
Abstracts	46	48	41	45	17	9	4.9
Indexes	17	29	21	17	14	8	1.8
Bibliographies	20	57	124	100	45	19	2.0
Contents lists	2	12	32	26	13	6	0.2
Book reviews	10	339	606	296	84	38	1.0
Conference proceedings	46	44	80	91	43	27	4.9
Cases, case notes	5	18	65	41	15	18	0.5
Accession lists	3	1	12	11	4	5	0.3
News articles	52	238	465	223	62	35	5.4
Review articles	6	29	200	83	29	21	0.6
Statistics	140	210	110	94	41	22	14.7
Others	54	43	45	39	17	11	5.6
							(100)

Source: CLOSSS

TABLE 20

WORLD PRODUCTION OF CURRENT SERIALS[1] (1969-1971 estimates)

Countries	No. of titles[2] (78 countries)	Percentage	No. of titles[3] (90 countries)	Percentage
Western Europe[4]	38051	49.29	60547	54.53
N America (USA,Canada)	11495	14.89	11495	10.33
Eastern Europe	7087	9.18	7724	6.94
Japan	5434	7.03	5434	4.88
Black Africa	381	0.49	381	0.34
Southern Africa	n.a	n.a	503	0.45
Arab World	781	1.01	781	0.70
USSR	6077	7.87	6077	5.46
Asia	2893	3.74	10193	9.16
Central and South America	2405	3.11	5382	4.83
Oceania/Australasia	2594	3.36	2594	2.33
TOTAL	77198	(100)	111212	(100)

Source: UNESCO Statistical Yearbook (1972) and estimates

[1] Category (iii) materials ('other' periodicals)

[2] Table 9.3

[3] Table 9.2 estimates plus other estimates (including UK and Federal Germany)

[4] Consists of the following countries:

Andorra; Austria; Belgium; Cyprus; Denmark; Eire; Finland; France; Germany (Federal Republic); Gibraltar; Greece; Iceland; Israel; Italy; Liechtenstein; Luxembourg; Malta; Monaco; Netherlands; Norway; Portugal; San Marino; Spain; Sweden; Switzerland; Turkey; United Kingdom; Vatican City State.

TABLE 21

PRODUCTION OF SOCIAL SCIENCE SERIALS CURRENT IN 1970
BY MAIN COUNTRY GROUPS

Countries	Current titles (CLOSSS) No. titles (1970)	Current titles (CLOSSS) Percentage	Current titles (UNESCO) plus estimates No.titles (1969-1971) (No.countries = 130)	Percentage
Western Europe [1]	1970	55.85	14475	53.48
N. America(USA,Canada)	953	27.02	3450	12.74
Eastern Europe	141	3.99	2132	7.87
Japan	42	1.19	1630	6.02
Black Africa	61	1.72	210	0.77
Southern Africa	29	0.82	34	0.12
Arab World	22	0.62	219	0.80
USSR	28	0.79	2132	7.87
Asia	97	2.75	858	3.17
Central and South America	97	2.75	1129	4.17
Oceania/Australasia	87	2.46	797	2.94
TOTAL	3527	(100)	27063	(100)

Source: CLOSSS, UNESCO Statistical Yearbook (1972)

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[1] See Table 20 (note 4) for list of countries

TABLE 22

SUBJECT DISTRIBUTION OF CURRENT SOCIAL SCIENCE SERIALS[1]

(1968-71) BY MAIN COUNTRY GROUPS[2]

Classes[3]	Country Western[4] Europe	North America	Eastern Europe	Japan	Black Africa	Southern Africa	Arab World	USSR	Asia	Central & S.America	Oceania/ Australasia	Total
2. Philosophy; Psychology	360 3.4	-	54 2.6	65 7.0	3 1.9	-	1 0.5	56 2.6	12 1.6	8 0.9	9 1.1	568 2.9
4. Sociology; statistics	763 7.2	-	194 9.2	88 5.4	45 28.3	-	82 40.4	35 1.6	97 13.3	166 17.7	55 6.9	1525 7.9
5. Economics; politics	2752 26.0	-	638 30.4	488 29.9	12 7.5	-	22 10.8	452 21.2	96 13.2	191 20.4	204 25.8	4856 25.2
8. Education	1877 17.7	-	383 18.2	282 12.3	51 32.1	-	43 21.2	211 9.9	152 20.8	291 31.1	118 14.9	3408 17.7
9. Commerce	1008 9.5	-	221 10.5	22 1.3	9 5.7	-	30 14.8	431 20.2	95 13.0	105 11.2	175 22.0	2096 10.9
10. Ethnography	415 3.9	-	55 2.6	15 0.9	8 5.0	-	10 4.9	0 0.0	20 2.7	22 2.3	21 2.6	566 2.9
11. Linguistics	369 3.5	-	105 5.0	130 8.0	6 3.8	-	0 0.0	129 6.1	38 5.2	7 0.7	6 0.8	790 4.1
18. Management	1325 12.5	-	271 12.9	303 18.6	5 3.1	-	4 2.0	628 29.5	133 18.2	54 5.8	79 9.9	2802 14.5
22. Geography	697 6.6	-	36 1.7	24 1.5	1 0.6	-	6 3.0	77 3.6	51 7.0	31 3.3	100 12.6	1023 5.3
23. History	1013 9.6	-	142 6.8	213 13.1	19 11.9	-	5 2.5	113 5.3	36 4.9	62 6.6	26 3.3	1629 8.5
TOTAL	10579 (100)	-	2099 (100)	1630 (100)	159 (100)	-	203 (100)	2132 (100)	730 (100)	937 (100)	794 (100)	19263 (100)

Source: UNESCO Statistical Yearbook (1972) Table 9.3

[1] Category (iii) materials ('other' periodicals)

[2] N = 78 countries

[3] Excludes classes 6 Law (UDC 34/351 - 354/36);
7 Military (UDC 355-359);
20 Recreation

[4] Excludes UK and Federal Germany

See Table 20 (note 4) for list of remaining countries

TABLE 23

SUBJECT CONTENT OF CURRENT SOCIAL SCIENCE SERIALS[1] IN SELECTED COUNTRIES

Countries	Subjects 2 Phil/Psych		4 Sociol/Stat		5 Pol. Sci.		8 Educ		9 Trade		10 Ethnog.		11 Ling.		18 Comm.		22 Geog.		23 Hist/Biogr.		Total social science serials	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Belgium (1968)	47	3.1	64	4.2	585	36.7	231	15.3	225	14.9	22	1.5	41	2.7	136	9.0	37	2.4	124	8.2	1512	(100)
Denmark (1969)	104	7.2	48	3.3	219	15.2	173	12.0	-	-	41	2.8	177	12.3	140	9.7	193	13.4	345	24.0	1440	(100)
France (1969)	88	4.1	217	10.1	350	16.3	678	31.5	74	3.4	(see cl.4)		49	2.3	361	16.8	104	4.8	231	10.7	2152	(100)
Italy (1971)	63	2.7	248	10.4	1097	46.2	242	10.2	225	9.5	81	3.4	53	2.2	135	5.7	129	5.4	104	4.4	2377	(100)
Spain (1971)	28	3.6	82	10.6	126	16.4	159	20.6	120	15.6	45	5.8	12	1.6	134	17.4	27	3.5	37	4.8	770	(100)
Sweden (1970)	4	0.4	38	3.7	155	20.1	157	15.1	156	15.0	8	0.8	22	2.1	237	22.9	137	13.2	123	11.9	1037	(100)
Switzerland (1971)	5	1.7	20	0.7	38	13.1	61	21.0	44	15.1	12	4.1	-	-	98	33.7	6	2.1	7	2.4	291	(100)
Czechoslovakia (1971)	10	4.7	9	4.2	24	11.3	29	13.6	62	29.1	32	15.0	20	9.4	3	1.4	3	1.4	21	9.9	213	(100)
Poland (1971)	21	2.7	112	14.2	199	25.3	135	17.2	66	8.4	6	0.8	39	5.0	117	14.9	19	2.4	73	9.3	787	(100)
USSR (1971)	56	2.7	35	1.7	438	21.1	208	10.0	413	19.9	-	-	128	6.2	628	30.3	77	3.7	93	4.5	2076	(100)
Australia (1970)	8	2.0	48	12.1	97	24.3	51	12.8	86	21.6	4	1.0	4	1.0	36	9.0	62	15.5	3	0.8	399	(100)
Brazil (1971)	3	2.8	10	9.4	14	13.2	14	13.2	31	29.3	-	-	1	0.9	25	23.6	4	3.8	4	3.8	106	(100)
Japan (1971)	65	4.0	88	5.4	488	29.9	282	17.3	22	1.3	15	0.9	130	8.0	303	18.6	24	1.5	213	13.1	1630	(100)

Source: UNESCO Statistical Yearbook (1972) Table 9.3

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[1] Excluding childrens magazines, comics, parish magazines, school magazines and house journals

TABLE 24

SOCIAL SCIENCE SERIALS AS A PERCENTAGE OF CURRENT SERIALS

Countries		Subjects 2		4		5		8		9		10		11		18		22		23		Other subjects		Total serials	
Belgium	(1968)	47	1.0	64	1.4	585	12.5	231	4.9	225	4.8	22	0.5	41	0.9	136	2.9	37	0.8	124	2.6	3170	67.7	4682	(100)
Denmark	(1969)	104	2.1	48	1.0	219	4.4	173	3.5	-	0.0	41	0.8	177	3.6	140	2.8	193	3.9	345	6.9	3538	71.1	4978	(100)
France	(1969)	88,	0.8	217	2.0	350	3.2	678	6.2	74	0.7	See	cl.4	49	0.5	361	3.3	104	1.0	231	2.1	870[illegible]	80.2	10861	(100)
Italy	(1971)	63	1.0	248	3.9	1097	17.2	242	3.8	225	3.5	81	1.3	53	0.8	135	2.1	129	2.0	104	2.0	4007	62.8	6384	(100)
Spain	(1971)	28	0.8	82	2.3	126	3.5	159	4.5	120	3.4	45	1.3	12	0.3	134	3.8	27	0.8	37	1.0	2802	78.4	3572	(100)
Sweden	(1970)	4	0.2	38	1.5	155	6.2	157	6.3	156	6.3	8	0.3	22	0.9	237	9.5	1375	5.5	123	4.9	1449	58.3	2486	(100)
Switzerland	(1971)	5	0.4	20	1.5	38	2.8	61	4.6	44	3.3	12	0.9	-	0.0	98	7.3	6	0.4	7	0.5	1046	78.2	1337	(100)
Czechoslovakia	(1971)	10	1.0	9	0.9	24	2.4	29	2.9	62	6.3	32	3.2	20	2.0	3	0.3	3	0.3	21	2.1	777	78.5	990	(100)
Poland	(1971)	21	0.1	112	4.2	199	7.4	135	5.0	66	2.4	6	0.2	39	1.4	117	4.3	19	0.7	73	2.7	1907	70.8	2694	(100)
USSR	(1971)	56	0.9	35	0.6	438	7.3	208	3.5	413	6.9	-	0.0	128	2.1	628	10.5	77	1.3	93	1.6	3890	65.2	5966	(100)
Australia	(1970)	8	0.6	48	3.9	97	7.9	51	4.1	86	7.0	4	0.3	4	0.3	36	2.9	62	5.0	3	0.2	832	67.6	1231	(100)
Brazil	(1971)	3	0.5	10	1.8	14	2.6	14	2.6	31	5.7	-	0.0	1	0.2	25	4.6	4	0.7	4	0.7	440	80.6	546	(100)
Japan	(1971)	65	1.2	88	1.6	488	9.0	282	5.2	22	0.4	15	0.3	130	2.4	303	5.6	24	0.4	213	3.9	3804	70.0	5434	(100)

Source: UNESCO Statistical Yearbook (1972) Table 9.3

TABLE 25

SUBJECT CONTENT OF SOCIAL SCIENCE SERIALS CURRENT IN 1970 FOR SELECTED COUNTRIES

(Based on analysis of single codes)

Subject	UK		USA		France		Germany (Fed.)		France, Germany (Fed) Neth, Belg, Italy		Western European incl. Israel, Greece and Turkey; excl UK	
	n	%	n	%	n	%	n	%	n	%	n	%
Social sciences	55	6.0	65	8.7	27	15.0	11	7.7	56	10.8	126	7.7
Anthropology	6	0.7	25	3.4	5	2.8	1	0.7	11	2.1	21	1.3
Archaeology	5	0.5	1	0.1	1	0.6	2	1.4	4	0.8	14	0.9
Architecture	6	0.7	3	0.4	1	0.6	1	0.7	2	0.4	9	0.5
Criminology	8	0.9	10	1.3	3	1.7	2	1.4	7	1.3	18	1.1
Economics	292	31.8	136	18.2	34	18.9	30	21.0	127	24.4	492	30.0
Education	122	13.3	92	12.3	11	6.1	8	5.6	29	5.6	160	9.8
Environment	36	3.9	14	1.9	3	1.7	2	1.4	9	1.7	50	3.1
Ergonomics	5	0.5	0	0.0	0	0.0	0	0.0	1	0.2	6	0.4
Futurology	0	0.0	0	0.0	0	0.0	2	1.4	4	0.8	4	0.2
Geography	15	1.6	13	1.7	13	7.2	9	6.3	28	5.4	53	3.2
History	17	1.9	15	2.0	4	2.2	5	3.5	11	2.1	30	1.8
Law	31	3.4	58	7.8	7	3.9	8	5.6	26	5.0	62	3.8
Library Science	25	2.7	22	2.9	4	2.2	0	0.0	5	1.0	31	1.9
Linguistics	20	2.2	31	4.2	16	8.9	23	16.1	57	11.0	86	5.2
Management	30	3.3	32	4.3	5	2.8	2	1.4	9	1.7	42	2.6
Philosophy	1	0.1	4	0.5	3	1.7	3	2.1	7	1.3	9	0.5
Political science	100	10.9	56	7.5	21	11.7	11	7.7	58	11.2	184	11.2
Psychology	31	3.4	92	12.3	9	5.0	11	7.7	26	5.0	68	4.1
Social policy	74	8.1	34	4.6	1	0.6	7	4.9	12	2.3	95	5.8
Sociology	32	3.5	38	5.1	10	5.6	3	2.1	24	4.6	63	3.8
Statistics	6	0.7	5	0.7	2	1.1	2	1.4	7	1.3	16	1.0
TOTAL	917	(100)	746	(100)	180	(100)	143	(100)	520	(100)	1639	(100)

Source: CLOSSS

TABLE 26

TYPE OF ISSUING BODY FOR SOCIAL SCIENCE SERIALS

CURRENT IN 1970 FOR SELECTED COUNTRIES

Type of issuing body	UK		USA		France		Germany (Fed)		France, Germany (Fed) Neth, Belg, Italy		Western European incl. Israel, Greece and Turkey	
	n	%	n	%	n	%	n	%	n	%	n	%
Associations, societies, etc.	404	35.2	329	37.0	70	33.0	26	16.6	154	25.6	624	31.2
Commercial publishers	195	17.0	144	16.2	39	13.4	93	59.2	173	28.8	408	20.4
Government	240	20.9	77	8.7	20	9.4	6	3.8	48	8.0	313	15.7
Educational institutions	133	11.6	229	25.8	40	18.9	18	11.5	119	19.8	297	14.9
Political group	22	1.9	7	0.8	2	0.9	2	1.3	6	1.0	33	1.7
International organization	30	2.6	32	3.6	25	11.8	2	1.3	59	9.8	134	6.7
Business and industry	55	4.8	17	1.9	3	1.4	0	0.0	10	1.7	85	4.3
Private individual	25	2.2	11	1.2	1	0.3	5	3.2	6	1.0	28	1.4
Others	44	3.8	42	4.7	12	5.7	5	3.2	26	4.3	77	3.9
TOTAL	1148	(100)	888	(100)	212	(100)	157	(100)	601	(100)	1999	(100)

Source: CLOSSS

TABLE 27

TYPES OF SOCIAL SCIENCE SERIALS CURRENT IN 1970 FOR SELECTED COUNTRIES

Description of serial	UK		USA		France		Germany (Fed)		France, Germany (Fed), Neth., Belg., Italy		Western European incl. Israel, Greece and Turkey	
	n	%	n	%	n	%	n	%	n	%	n	%
Journals	690	59.4	694	76.9	176	80.4	122	78.2	480	79.0	1350	66.9
Fixed period reports	255	22.0	42	4.7	4	1.8	3	1.9	15	2.5	288	14.3
Statistics	69	5.9	12	1.3	8	3.7	6	3.8	22	3.6	114	5.6
Abstracts	27	2.3	37	4.1	5	2.3	4	2.6	17	2.8	48	2.4
Monograph ser.	18	1.6	45	5.0	1	0.5	11	7.1	17	2.8	40	2.0
Yearbook	40	3.4	9	1.0	9	4.1	3	1.9	17	2.8	66	3.3
Conference proceedings	19	1.6	26	2.9	6	2.7	0	0.0	10	1.6	38	1.9
Bibliography	15	1.3	9	1.0	2	0.9	4	2.6	8	1.3	24	1.2
Indexes	4	0.3	9	1.0	5	2.3	1	0.6	7	1.2	14	0.7
Legal/legislation	6	0.5	0	0.0	0	0.0	0	0.0	3	0.5	10	0.5
Book reviews-	1	0.1	4	0.4	1	0.5	1	0.6	3	0.5	4	0.2
Cases, case notes	5	0.4	0	0.0	0	0.0	1	0.6	1	0.2	6	0.3
Content lists	3	0.3	3	0.3	1	0.5	0	0.0	5	0.8	5	0.2
Research index	0	0.0	3	0.3	1	0.5	0	0.0	1	0.2	2	0.1
Accessions lists	0	0.0	4	0.4	0	0.0	0	0.0	0	0.0	0	0.0
Others	9	0.8	5	0.6	0	0.0	0	0.0	1	0.2	10	0.5
	1161	(100)	902	(100)	219	(100)	156	(100)	607	(100)	2019	(100)

Source: CLOSSS

TABLE 28

NUMBER OF SOCIAL SCIENCE SERIALS PRODUCED 1880-1970 IN THE TOP 12 BOOK PRODUCING COUNTRIES

Country	Number of serials current in each year and percentage of total at 1970																							
	1880		1890		1900		1910		1920		1930		1940		1950		1955		1960		1965		1970	
World	184	5.2	256	7.3	380	10.8	526	15.0	695	19.8	997	28.4	1282	36.5	1812	51.6	2128	60.6	2479	70.6	2939	83.7	3512	(100)
USSR	0		0		0		0		0		4	14.3	8	28.6	14	50.0	18	64.3	27	96.4	26	92.9	28	(100)
United States	23	2.6	38	4.3	56	6.4	90	10.3	172	19.6	248	28.3	361	41.3	478	54.6	538	61.5	618	70.6	730	83.4	875	(100)
Germany (Fed.) (Incl. pre-1945 Germany)	11	6.0	17	9.2	23	12.5	37	20.1	40	21.7	55	29.9	61	33.2	105	57.1	121	65.8	143	77.7	163	88.6	184	(100)
United Kingdom	88	8.2	120	11.2	181	16.9	238	22.3	291	27.2	399	37.4	473	44.3	613	57.4	683	64.0	740	69.3	864	80.9	1068	(100)
Japan	0		0		0		2	4.8	3	7.1	4	9.5	7	16.7	15	35.7	24	57.1	30	71.4	36	85.7	42	(100)
France	20	9.3	26	12.1	30	14.0	42	19.5	46	21.4	65	30.2	76	35.3	116	53.9	140	65.1	165	76.7	185	86.0	215	(100)
Spain	0		0		1	3.3	1	3.3	2	6.6	2	6.6	6	20.0	20	60.0	21	70.0	25	83.3	26	86.7	30	(100)
India	0		0		0		1	1.8	2	3.6	5	8.8	7	12.3	21	36.8	27	47.4	40	70.2	52	91.2	57	(100)
Netherlands	4	5.6	3	4.2	4	5.6	5	6.9	8	11.1	14	19.4	19	26.4	31	43.1	37	51.4	44	61.1	58	80.6	72	(100)
Poland	0		0		0		1	3.6	2	7.2	5	17.9	6	21.4	10	35.7	14	50.0	21	75.0	24	85.7	28	(100)
Yugoslavia	0		0		0		0		0		0		0		1	8.3	2	16.7	7	58.3	9	75.0	12	(100)
Italy	5	4.8	8	7.7	11	10.6	14	13.5	20	19.2	24	23.1	31	29.8	58	55.8	75	72.1	81	77.9	90	86.5	104	(100)

Source: CLOSSS

TABLE 29

SUBJECT DISTRIBUTION OF SOCIAL SCIENCE SERIALS[1]
(1968-1971) BY MAIN COUNTRY GROUPS[2]

Classes[3]	Countries Western Europe	North America	Eastern Europe	Japan	Black Africa	Southern Africa	Arab World	USSR	Asia	Central & S. America	Oceania/ Australasia	Total
2. Philosohpy; psychology	360 63.4	-	54 9.5	65 11.4	3 0.5	-	1 0.2	56 9.9	12 2.1	8 1.4	9 1.6	568 (100.0)
4. Sociology; statistics	763 50.0	-	194 12.7	88 5.8	45 3.0	-	82 5.4	35 2.3	97 6.4	166 10.9	55 3.6	1525 (100.0)
5. Economics; politics	2752 56.7	-	638 13.1	488 10.0	12 0.2	-	22 0.5	452 9.3	96 2.0	191 3.9	205 4.2	4856 (100.0)
8. Education	1877 55.1	-	383 11.2	282 8.3	51 1.5	-	43 1.3	211 6.2	152 4.5	291 8.5	118 3.5	3408 (100.0)
9. Commerce	1008 48.1	-	221 10.5	22 1.0	9 0.4	-	30 1.4	431 20.6	95 4.5	105 5.0	175 8.3	2096 (100.0)
10.Ethnography	415 73.3	-	55 9.7	15 2.7	8 1.4	-	10 1.8	0 0.0	20 3.5	22 3.9	21 3.7	566 (100.0)
11.Linguistics	369 46.7	-	105 13.3	130 16.5	6 0.8	-	0 0.0	129 16.3	38 4.8	7 0.9	6 0.8	790 (100.0)
18. Management	1325 47.3	-	271 9.7	303 10.8	5 0.2	-	4 0.1	628 22.4	133 4.7	54 1.9	79 2.8	2802 (100.0)
22. Geography	697 68.1	-	36 3.5	24 2.3	1 0.1	-	6 0.6	77 7.5	51 5.0	31 3.0	100 9.8	1023 (100.0)
23. History	1013 62.2	-	142 8.7	213 13.1	19 1.2	-	5 0.3	113 6.9	36 2.2	62 3.8	26 1.6	1629 (100.0)

Source: UNESCO Statistical Yearbook (1972)

[1] Category (iii) materials ('other'periodicals)

[2] N = 78 countries

[3] Excludes classes 6 Law (UDC 34/351 - 354/36);
7 Military (UDC 355-359);
20 Recreation

TABLE 30

GEOGRAPHICAL DISTRIBUTION OF SOCIAL SCIENCE SERIALS CURRENT IN 1970

Country	Rank	No. titles	Percentage of CLOSSS file
UK	1	1094	30.9
USA	2	882	24.9
France	3	215	6.1
Germany (Fed Rep)	4	178	5.0
Italy	5	104	2.9
Switzerland	6	83	2.3
Netherlands	7	75	2.1
Canada	8	71	2.0
Australia	9	67	1.9
Belgium	10=	58	1.6
India	10=	58	1.6
Japan	12	42	1.2
Hungary	13	31	0.9
Spain	14	30	0.8
Czechoslovakia	15=	28	0.8
Poland	15=	28	0.8
Sweden	15=	28	0.8
USSR	15=	28	0.8
South Africa	15=	28	0.8
Rumania	20	21	0.6
Denmark	21=	20	0.6
Brazil	21=	20	0.6
Austria	23=	18	0.5
New Zealand	23=	18	0.5
DDR	25	17	0.5
Argentina	26	16	0.5
Mexico	27=	15	0.4
Nigeria	27=	15	0.4
Eire	29=	14	0.4
Yugoslavia	30	12	0.4
Finland	31=	10	0.3
Norway	31=	10	0.3
Portugal	33	9	0.3
Colombia	34	8	0.2
Ethiopia	35=	7	0.2
Kenya	35=	7	0.2
Philippines	35=	7	0.2
UAR	35=	7	0.2
Greece	39=	6	0.2
Israel	39=	6	0.2
Peru	39=	6	0.2
Singapore	39=	6	0.2
Hong Kong	43=	5	0.1
Pakistan	43=	5	0.1
Tanzania	43=	5	0.1
Venezuela	43=	5	0.1
TOTAL	-	3423/3545	96.7 /100%

Source: CLOSSS

TABLE 31

GEOGRAPHICAL DISTRIBUTION OF SOCIAL SCIENCE SERIALS

PRODUCTION BY MAIN PRODUCING COUNTRIES (WLOSSP)

Country	WLOSSP 4th edn. (1974)			WLOSSP 3rd edn. (1966)		
	No. titles	Rank	Percentage of 'world' total	No. titles	Rank[1]	Percentage of 'world' total
USA	340	1	12.77	114	1	8.70
France	199	2	7.48	90	2	6.85
UK	163	3	6.12	87	3	6.63
Italy	134	4	5.03	84	4	6.40
Germany (Fed)	127	5	4.77	54	6	4.11
Japan	111	6	4.17	79	5	6.01
India	92	7	3.46	49	8	3.73
USSR	87	8	3.27	51	7	3.89
Brazil	72	9	2.70	33	10	2.51
Netherlands	69	10	2.60	26	16=	2.00
Spain	52	11	1.95	38	9	2.90
Belgium	51	12	1.92	31	12=	2.36
Czechoslovakia	49	13	1.84	24	18=	1.83
Yugoslavia	48	14	1.80	31	12=	2.36
Argentina	46	15	1.73	27	14=	2.06
Hungary	44	16=	1.65	33	10=	2.51
Poland	44	16=	1.65	26	16=	2.00
Mexico	41	18	1.54	21	20	1.60
Canada	37	19	1.39	11	28=	0.84
Bulgaria	36	20	1.35	27	14=	2.06
Australia	35	21	1.31	11	28=	0.84
NGO's	32	22	1.20	-	-	-
Romania	31	23	1.16	13	25	1.00
DDR	30	24	1.13	16	23=	1.22
IGO's	29	25	1.09	24	18=	1.83
Venezuela	28	26	1.05	12	26=	0.91
Switzerland	26	27	0.98	17	21=	1.30
Turkey	24	28	0.90	16	23=	1.21
Chile	22	29=	0.83	4	46=	0.30
Colombia	22	29=	0.83	8	36=	0.61
Sweden	20	31=	0.75	12	26=	0.91
South Africa	20	31=	0.75	8	36=	0.61
Israel	20	31=	0.75	10	30=	0.76
Korea (S)	19	34=	0.71	17	21=	1.30
Nigeria	19	34=	0.71	3	52=	0.22
China (PRP)	17	36	0.64	10	30=	0.80
Norway	17	36=	0.64	8	36=	0.61
Egypt	16	38=	0.60	7	40=	0.53
Finland	16	38=	0.60	9	33=	0.70
Austria	15	40=	0.56	3	52=	0.23
Denmark	15	40=	0.56	10	30=	0.80
Peru	15	40=	0.56	9	33=	0.70
Ecuador	14	43	0.53	6	42=	0.46
Philippines	14	44	0.53	7	40=	0.53
TOTAL	2662	-	88.56 100%	1313	-	89.73 100%

Source: World list of Social Science Periodicals (WLOSSP

[1] Portugal (33=); Pakistan (36=); Taiwan (42=); Bolivia (44=); Malaysia (44=); Uru[illegible]y (4[illegible]=); Thailand (46=); Senegal (46=); Liberia (46[illegible]);

TABLE 32

LANGUAGE OF CONTENTS OF SOCIAL SCIENCE SERIALS CURRENT IN 1970

Language	Occurrence of language code Singly	With between 1 and 4 or more other codes (1)	(2)	(3)	(4)	Percentage based on single occurrence
English	2311	239	91	55	13	80.0
French	205	136	93	51	13	7.2
German	129	54	59	44	13	4.5
Spanish	87	14	13	11	8	3.1
Italian	56	13	7	14	7	1.9
Russian	16	8	13	25	5	0.5
Portuguese	19	5	0	3	1	0.6
Dutch &Flemish	14	13	6	5	1	0.5
Polish	11	5	1	4	0	0.4
Czech	9	2	3	3	2	0.3
Japanese	9	9	1	0	0	0.3
Rumanian	8	0	4	1	0	0.2
Danish	6	4	0	0	0	0.1
Hungarian	6	0	3	5	2	0.1
Norwegian	6	0	1	0	0	0.1
Swedish	6	10	0	1	0	0.1
	2906	-	-	-	-	(100)

Other languages recorded for titles were: Afrikaans, Arabic, Bulgarian, Chinese, Finnish, Greek, Hebrew, Hindi, Latin Serbo-Croat, Swahili, Turkish, Vietnamese, Welsh.

Source: CLOSSS

TABLE 33

OCCURRENCE OF SEPARATE LANGUAGE EDITIONS OF SOCIAL SCIENCE SERIALS CURRENT IN 1970

Language edition	Number	Percentage
French	33	42.3
Spanish	15	19.3
German	10	12.8
English	7	9.0
Russian	7	9.0
Portuguese	2	2.5
Afrikaans	1	1.3
Chinese	1	1.3
Dutch	1	1.3
Italian	1	1.3
TOTAL	78	(100)

Source: CLOSSS

TABLE 34

LANGUAGE OF ABSTRACTS CONTAINED IN SOCIAL SCIENCE SERIALS CURRENT IN 1970

Language of abstract	Number of occurrences
English	116
French	53
German	38
Russian	25
Spanish	11
Italian	4
Dutch	2
Others	3

Source: CLOSSS

TABLE 35

OCCURRENCE OF ABSTRACTS OF ARTICLES IN SOCIAL SCIENCE SERIALS CURRENT IN 1970

Category	No. titles	Percentage
Abstracts with all articles	473	16.0
Abstracts with some articles	161	5.4
No abstracts	2323	78.6
TOTAL	2957	(100)

Source: CLOSSS

TABLE 36

SUBJECT CONTENT OF SOCIAL SCIENCE SERIALS CURRENT IN 1970

Subject	Occurrence of codes with between 1 or 2 or more other codes Singly	(1)	(2)	Total based on all codes	Percentage based on single codes	Index based on all codes.
Social sciences	236	40	8	284	8.6	7.1
Anthropology	70	33	9	112	2.5	2.8
Archaeology	23	13	5	41	0.8	1.0
Architecture	14	26	5	45	0.5	1.1
Criminology	31	9	0	40	1.1	1.0
Economics	711	225	42	978	25.8	24.6
Education	286	94	6	386	10.4	9.7
Environment	66	4	0	70	2.4	1.8
Ergonomics	8	3	1	12	0.3	0.3
Futurology	5	1	1	7	0.2	0.2
Geography	118	6	2	126	4.3	3.2
History	58	40	7	105	2.1	2.6
Law	135	41	2	178	4.9	4.5
Library science	60	9	0	69	2.2	1.7
Linguistics	142	70	3	215	5.1	5.4
Management	72	41	9	122	2.6	3.1
Philosophy	14	11	1	26	0.5	0.6
Political science	270	158	18	446	9.8	11.2
Psychology	177	47	28	252	6.4	6.3
Social policy	131	70	13	214	4.7	5.4
Sociology	104	77	24	205	3.8	5.2
Statistics	29	13	3	45	1.1	1.1
TOTAL	2760	-	-	3978	(100)	(100)

Subject	Single codes %	Rank	Multiple codes Index	Rank
Economics	25.8	1	24.6	1
Education	10.4	2	9.7	3
Political science	9.8	3	11.2	2
Social science	8.6	4	7.1	4
Psychology	6.4	5	6.3	5
Linguistics	5.1	6	5.4	6
Law	4.9	7	4.5	9
Social policy	4.7	8	5.4	7
Geography	4.3	9	3.2	10
Sociology	3.8	10	5.2	8
Management	2.6	11	3.1	11

Source: CLOSSS

TABLE 37

SUBSCRIPTION PRICE (1969) OF SOCIAL SCIENCE SERIALS CURRENT IN 1970

Category	No. titles	Percentage
Limited to members	65	2.2
Free	249	8.5
Up to £0.49	221	7.6
£0.50 - £0.99	227	7.8
£1.00 - £1.99	446	15.3
£2.00 - £4.99	1100	37.7
£5.00 - £9.99	375	12.8
£10.00 - £14.99	78	2.7
£15.00 - £24.99	44	1.5
Over £25.00	18	0.6
Subscription varies	97	3.3
TOTAL	2920	(100)

Source: CLOSSS

TABLE 38

NUMBER OF ARTICLES PER YEAR APPEARING IN SOCIAL SCIENCE SERIALS CURRENT IN 1970

Category	No. titles		Percentage	
	(a)	(b)	(a)	(b)
0 articles (but contains other material)	302	-	10.2	-
Articles per year				
1	286	286	9.6	10.7
2 - 4	94	94	3.2	3.5
5 - 9	242	242	8.1	9.0
10 - 14	259	259	8.7	9.7
15 - 19	265	265	8.9	9.8
20 - 29	412	412	13.9	15.4
30 - 39	279	279	9.4	10.6
40 - 49	177	177	5.9	6.6
50 - 59	101	101	3.4	3.7
60 - 69	93	93	3.1	3.4
70 - 79	68	68	2.3	2.5
80 - 89	47	47	1.6	1.7
90 - 99	40	40	1.3	1.5
100 +	309	309	10.4	11.6
TOTAL	2974	2672	(100)	(100)

Source: CLOSSS

TABLE 39

CURRENT SOCIAL SCIENCE SERIALS: BROAD CATEGORY OF SERIAL BY SUBJECT (Rounded percentages)

	Subject																					
Type of serial	Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
Periodical	81	88	100	100	96	99	95	100	100	91	92	98	100	98	94	96	96	97	97	99	98	100
Monograph series	19	12	0	0	4	1	5	0	0	9	8	2	0	2	6	4	4	3	3	1	2	0
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
N	121	43	52	42	1037	415	151	15	6	156	107	183	73	241	135	27	460	243	320	216	226	45

Source: CLOSSS

TABLE 40

CURRENT SOCIAL SCIENCE SERIALS: FORM OF SERIAL BY SUBJECT (Rounded percentages)

Description of serial	Subject Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
Journals	74	72	86	68	61	81	74	67	83	78	87	78	76	92	72	89	75	90	62	58	77	84
Abstracts	2	5	2	5	1	4	3	7	17	3	0	2	0	2	5	0	2	2	5	3	3	2
Indexes	1	5	2	0	0	1	1	0	0	0	0	0	0	1	1	0	1	0	3	0	0	0
Book reviews	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0
Bibliography	2	2	0	2	1	0	1	0	0	1	1	1	4	1	0	0	1	0	4	0	1	0
Statistics	0	0	6	2	11	0	1	20	0	1	0	1	0	0	1	0	2	0	11	3	5	9
Yearbock	1	0	0	2	3	3	0	0	0	3	0	4	0	0	1	0	3	1	3	4	2	0
Fixed report	2	7	2	17	16	7	11	7	0	3	3	4	17	1	9	4	7	3	6	27	8	0
Conference	0	0	0	0	3	1	3	0	0	2	1	3	1	1	4	4	4	1	1	2	1	0
Accessions	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5
Monog. ser.	17	7	0	0	3	1	3	0	0	6	8	2	0	1	4	4	3	2	3	0	1	0
Cases/Contents/ Index to research/ Legal/Others	2	2	2	2	2	2	3	0	0	2	0	2	0	0	1	0	1	0	0	1	1	0
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
N	121	43	52	41	1027	414	149	15	6	154	107	181	72	241	134	27	458	240	312	213	226	44

Source: CLOSSS

TABLE 41

CURRENT SOCIAL SCIENCE SERIALS: FREQUENCY OF PUBLICATION BY SUBJECT (Rounded percentages)

No. issues per year	Subject Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
1	22	49	6	29	27	14	15	2	0	26	18	23	18	12	15	11	20	13	21	36	20	9
2	11	14	2	10	4	9	3	0	0	14	19	8	5	20	4	7	5	8	8	2	9	2
3	5	5	0	2	4	13	5	7	0	3	6	8	0	12	7	11	3	5	6	3	4	21
4	28	14	14	29	21	26	26	40	67	30	40	30	38	29	22	56	28	41	23	25	45	42
5	0	0	4	0	1	2	1	0	0	1	1	2	0	1	1	0	1	0	1	0	0	2
6	6	5	14	14	6	8	9	20	17	6	5	10	15	8	9	4	8	16	7	8	6	5
7	0	0	2	0	0	0	1	0	0	0	0	1	0	0	0	4	0	0	0	0	0	0
8	1	0	4	2	0	3	1	0	0	1	0	3	1	2	0	0	0	0	1	0	0	0
9	1	0	2	0	0	6	1	0	0	1	0	0	1	6	1	0	1	0	1	0	0	0
10	0	0	2	7	1	3	1	0	16	1	0	2	3	2	1	0	2	1	0	1	1	0
11	0	0	8	0	1	0	3	0	0	0	0	1	0	0	1	0	3	0	1	1	0	2
12	0	0	43	5	23	8	26	13	0	8	4	9	8	2	30	0	16	10	18	17	7	14
13-23	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0
24-26	0	0	0	0	2	0	2	0	0	0	0	1	0	1	1	4	3	1	1	1	1	0
27-51	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	1	0	0
52	0	2	0	0	3	1	1	0	0	0	0	2	1	0	2	0	4	0	6	1	0	0
Irregular	26	12	0	2	5	4	6	0	0	9	8	2	0	5	7	4	5	3	4	3	5	2
Ev. 2 years or more	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
N	120	43	51	42	1029	416	149	15	6	155	106	182	73	241	134	27	460	244	320	212	223	43

Source: CLOSSS

TABLE 42

CURRENT SOCIAL SCIENCE SERIALS: TYPE OF ISSUING BODY BY SUBJECT (Rounded percentages)

Type of issuing body	Subject																					
	Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
Associations	28	41	44	28	26	37	36	27	0	47	38	19	41	28	40	25	29	47	21	45	31	42
Publisher	13	12	33	16	15	17	19	21	66	13	11	23	19	27	21	19	18	29	19	11	15	11
Government	3	5	8	38	20	16	19	34	0	3	5	3	15	4	14	0	13	3	21	24	15	13
Educational	37	31	2	13	16	24	14	6	33	34	40	51	7	35	17	37	23	14	26	6	27	16
International	2	0	0	0	7	5	5	6	0	3	1	2	3	4	4	11	7	1	5	6	4	4
Commercial	1	0	0	2	10	0	1	0	0	0	0	0	0	0	4	0	0	0	0	1	2	4
Private	1	2	10	2	2	0	2	0	0	0	0	0	1	0	0	0	2	0	2	0	1	4
Political	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0
Others	16	9	2	2	2	0	3	6	0	1	5	1	14	1	0	7	2	5	6	8	4	2
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
N	117	42	52	40	1018	380	146	15	6	146	105	178	73	239	133	27	448	235	299	212	224	45

Source: CLOSSS

TABLE 43

CURRENT SOCIAL SCIENCE SERIALS: COUNTRY OF PUBLICATION BY SUBJECT (Raw data - selected countries)

Country of publication	Subject Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
France	7	2	3	3	58	17	5	0	0	16	7	12	4	23	5	3	41	10	31	3	20	5
Germany (Fed)	3	2	6	2	33	10	4	3	2	10	5	12	0	28	2	5	18	11	14	8	5	2
India	1	0	0	0	22	10	0	0	0	3	1	0	4	2	3	0	9	4	8	2	3	2
Italy	3	1	2	0	38	2	3	0	0	5	1	13	1	7	1	0	19	3	9	2	7	3
Japan	0	0	2	1	13	6	2	0	0	4	0	0	0	4	4	0	5	5	4	1	2	1
Netherlands	1	0	1	1	23	6	4	0	2	2	1	1	0	8	2	0	7	4	8	4	7	2
Poland	1	4	1	0	6	0	1	0	0	4	2	3	2	2	0	0	6	0	3	0	0	1
Spain	0	0	0	0	9	2	1	0	0	1	1	1	0	2	2	0	8	1	6	0	3	0
United Kingdom	14	9	17	13	388	164	66	7	0	29	30	37	27	46	59	6	154	49	72	112	65	11
United States	33	3	5	12	187	122	31	1	1	23	25	73	26	45	48	6	89	110	76	61	70	9
USSR	0	0	0	0	5	2	0	0	0	2	0	1	0	4	0	0	3	2	1	0	0	0
Yugoslavia	0	1	0	0	4	0	4	0	0	0	0	1	0	1	0	0	4	0	0	1	0	0
n	63	22	37	32	786	341	121	11	5	99	73	154	64	172	126	20	363	199	232	194	182	36
N	118	52	43	43	1042	418	151	15	6	158	107	187	73	242	136	27	463	241	323	217	225	44

Source: CLOSSS

TABLE 44

CURRENT SOCIAL SCIENCE SERIALS: OCCURRENCE OF ABSTRACTS WITH ARTICLES BY SUBJECT (Rounded percentages)

Abstracts with articles	Subject																				
	Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
All	25	8	23	24	10	11	25	17	0	26	11	16	16	11	15	0	8	45	11	12	22	37
Some	15	26	6	9	3	3	3	17	0	8	4	9	3	3	5	4	5	9	4	4	7	12
None	59	67	71	67	87	86	72	66	100	66	86	75	81	85	80	96	87	46	86	84	71	51
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
N	106	39	48	34	918	372	126	12	3	140	104	165	67	227	110	23	399	219	228	197	185	41

Source: CLOSSS

TABLE 45

CURRENT SOCIAL SCIENCE SERIALS: LANGUAGE ABSTRACTS BY SUBJECT (Raw data)

Language	Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
English	7	3	9	0	27	2	12	3	0	23	4	3	0	3	0	0	11	24	6	1	5	5
French	4	1	3	0	14	1	5	1	0	9	5	0	0	1	0	0	2	10	1	1	2	1
German	2	0	2	1	10	2	4	1	0	4	2	1	0	0	0	0	0	7	1	1	1	0
Italian	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Russian	0	0	1	1	4	1	2	0	0	4	2	1	0	0	0	0	4	3	0	0	0	2
Spanish	0	0	1	1	4	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0
Chinese	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	1	0

Source: CLOSSS

TABLE 16

CURRENT SOCIAL SCIENCE SERIALS: LANGUAGE EDITIONS BY SUBJECT (Raw data)

Language of edition	Subject Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Lang	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
English	0	0	0	1	3	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
French	1	1	0	1	16	2	0	0	0	0	0	2	0	0	0	0	3	1	5	6	1	0
German	1	1	0	0	5	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0
Italian	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Portuguese	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Spanish	0	0	0	1	6	1	0	0	0	0	0	0	0	0	0	0	2	0	1	5	1	0
Other	0	0	0	0	4	0	0	0	0	1	0	0	0	0	0	0	2	0	0	5	0	0

Source: CLOSSS

TABLE 47

CURRENT SOCIAL SCIENCE SERIALS: SERIALS CONTAINING DIFFERENT NUMB'RS OF ARTICLES, BY SUBJECT (Rounded percentages)

Number of Articles	Subject																				
	Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Ling	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
0	3	8	9	11	15	6	7	17	0	7	1	6	11	3	4	0	8	3	27	12	9	7
1	13	11	2	16	16	6	12	0	0	9	8	5	16	1	13	5	9	3	6	25	5	0
2 - 4	8	14	0	3	4	3	2	0	0	5	4	5	3	5	1	5	4	2	4	2	2	5
5 - 9	13	24	2	11	8	7	2	8	0	11	17	13	6	16	6	14	8	9	4	3	14	5
10 - 14	13	8	4	8	6	9	7	8	0	14	17	15	3	14	6	0	10	6	8	8	10	5
15 - 19	12	14	6	11	7	11	8	17	0	6	17	12	8	9	6	9	9	6	7	6	13	15
20 - 29	19	11	13	8	10	18	16	0	33	14	20	18	22	21	11	23	10	18	9	7	18	24
30 - 39	11	3	6	11	8	12	5	0	33	9	3	13	11	8	12	23	9	14	9	10	9	10
40 - 49	4	5	2	11	4	6	6	8	33	10	7	4	6	9	7	9	5	9	3	7	7	15
[illegible]0 - 59	9	3	2	3	3	3	5	0	0	3	2	2	6	3	4	5	4	8	4	4	3	0
[illegible]0 - 69	1	0	4	0	3	4	4	0	0	2	1	1	3	3	4	5	4	4	2	4	3	0
70 - 79	1	0	4	3	2	1	5	8	0	4	0	1	2	2	6	0	3	3	2	4	2	7
80 - 89	1	0	4	0	2	2	3	0	0	1	0	1	0	1	4	0	1	3	1	3	2	2
90 - 99	0	0	6	0	2	2	2	0	0	0	1	1	0	0	3	5	3	1	0	0	0	2
100+	1	0	34	5	12	9	16	33	0	4	2	3	2	4	16	0	14	11	13	8	5	2
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
N	108	37	47	37	886	373	131	12	3	145	103	163	63	225	108	22	397	220	245	195	197	41

Source: CLOSSS

TABLE 48

CURRENT SOCIAL SCIENCE SERIALS: SUBSCRIPTION PRICE BY SUBJECT (Rounded percentages)

Subscription price (£.p) or category	Anth	Arch	Archit	Crim	Econ	Educ	Env	Ergon	Fut	Geog	Hist	Law	Lib	Lang	Man	Phil	Pol	Psych	Soc Sci	Social	Sociol	Stat
Limited	2	3	0	5	3	1	3	0	0	4	4	1	5	0	1	0	3	0	2	2	1	0
Varies	21	11	0	3	4	2	1	8	0	8	7	5	2	1	7	4	4	3	5	2	2	0
Free	4	3	2	11	15	13	12	8	0	2	1	1	14	5	5	0	5	3	8	9	4	5
Up to 0.49	2	11	0	16	10	12	6	8	0	6	2	5	3	8	6	4	10	3	2	12	8	3
0.50 - 0.99	5	3	2	14	8	12	6	0	0	7	6	2	9	10	5	4	10	3	6	16	8	0
1.00 - 1.99	11	17	16	11	14	21	13	0	0	26	22	5	17	23	10	21	16	8	14	15	12	11
2.00 - 2.99	18	17	7	8	14	15	14	0	17	20	18	24	9	23	11	17	18	10	15	13	20	18
3.00 - 4.99	22	25	29	16	17	16	18	33	17	19	30	33	24	16	28	42	22	30	25	17	24	34
5.00 - 9.99	10	8	38	11	10	6	19	25	50	7	7	18	12	9	22	4	11	29	15	10	15	21
10.00 - 14.99	4	3	2	0	3	1	3	17	0	1	0	4	3	3	4	4	1	8	3	3	4	8
15.00 - 24.99	1	0	2	3	1	0	3	0	0	0	2	1	3	1	0	0	1	3	4	1	2	0
Over 25.00	0	0	2	3	1	0	1	0	16	0	0	1	0	0	0	0	0	1	2	0	0	0
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
N	100	36	45	37	846	347	125	12	6	113	98	150	58	202	113	24	393	218	261	174	186	38

Source: CLOSSS

TABLE 49

SOCIAL SCIENCE SERIALS (1880-1970): SUBJECT CONTENT

Year n,%

SUBJECT	1880		1890		1900		1910		1920		1930		1940		1950		1955		1960		1965		1970	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Social sciences	17	11.7	17	8.3	23	7.7	34	8.1	44	7.6	57	7.2	77	7.3	121	8.2	152	9.0	165	8.4	204	8.6	236	8.6
Anthropology	4	2.8	6	2.9	9	3.0	12	2.9	14	2.4	18	2.3	26	2.5	33	2.2	40	2.4	48	2.4	64	2.7	70	2.5
Criminology	2	1.4	4	2.0	4	1.3	5	1.2	5	0.9	7	0.9	10	1.0	16	1.1	17	1.0	23	1.2	30	1.3	31	1.1
Economics	39	26.9	55	26.8	84	28.3	121	28.9	167	28.9	235	29.7	308	29.3	446	30.1	487	28.7	543	27.5	633	26.8	711	25.8
Education	7	4.8	8	3.9	13	4.4	27	6.4	48	8.3	62	7.8	72	6.8	110	7.4	125	7.4	159	8.1	216	9.1	286	10.4
Environment	0	0.0	0	0.0	2	0.7	4	1.0	8	1.4	12	1.5	15	1.4	22	1.5	24	1.4	30	1.5	42	1.7	66	2.4
Ergonomics	1	0.7	1	0.5	3	1.0	3	0.7	3	0.5	3	0.4	3	0.3	3	0.2	3	0.2	5	0.3	6	0.3	8	0.3
Futurology	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	0.0
Geography	11	7.6	13	6.3	19	6.4	23	5.5	31	5.4	37	4.7	49	4.6	69	4.6	80	4.7	95	4.8	108	4.6	118	4.3
History	1	0.7	2	1.0	4	1.3	5	1.2	12	2.1	20	2.5	28	2.7	34	2.3	46	2.7	49	2.5	52	2.2	58	2.1
Linguistics	7	4.8	10	4.9	10	3.4	12	2.9	14	2.4	18	2.3	26	2.5	41	2.8	51	3.0	69	3.5	105	4.4	142	5.1
Management	1	0.7	1	0.5	1	0.3	1	0.2	5	0.9	13	1.6	21	2.0	31	2.1	40	2.4	53	2.7	67	2.8	72	2.6
Political science	12	8.3	23	11.3	34	11.5	46	11.0	59	10.2	86	10.9	120	11.4	150	10.1	176	10.4	202	10.2	229	9.7	270	9.8
Psychology	5	3.4	7	3.4	10	3.4	20	4.8	26	4.5	42	5.3	62	5.9	91	6.1	106	6.2	129	6.5	153	6.5	177	6.4
Social policy	11	7.6	18	8.8	25	8.4	31	7.4	42	7.3	54	6.8	67	6.4	96	6.5	101	5.9	110	5.6	122	5.2	131	4.7
Sociology	6	4.1	6	2.9	8	2.7	10	[illegible]	13	2.3	21	2.7	33	3.1	47	3.2	57	3.4	69	3.6	84	3.6	104	3.8
Statistics	3	2.1	6	2.9	7	2.4	8	1.9	9	1.6	10	1.3	14	1.3	20	1.3	24	1.4	29	1.5	28	1.2	29	1.0
Law	10	6.9	16	7.8	21	7.1	29	6.9	43	7.4	56	7.1	71	6.7	88	5.9	97	5.7	109	5.5	120	5.1	135	4.9
Architecture	0	0.0	2	1.0	4	1.3	4	1.0	5	0.9	6	0.8	7	0.7	8	0.5	9	0.5	11	0.6	13	0.6	14	0.5
Archaeology	3	2.1	4	2.0	4	1.3	5	1.2	5	0.9	6	0.8	6	0.6	13	0.9	15	0.9	18	0.9	22	0.9	23	0.8
Library science	3	2.1	4	2.0	8	2.7	13	3.1	18	3.1	21	2.7	28	2.7	35	2.4	36	2.1	45	2.3	52	2.2	60	2.2
Philosophy	2	1.4	2	1.0	4	1.3	6	1.4	6	1.0	8	1.0	9	0.9	10	0.7	11	0.6	12	0.6	13	0.6	14	0.5
TOTAL	145	(100)	205	(100)	297	(100)	419	(100)	577	(100)	792	(100)	1052	(100)	1484	(100)	1697	(100)	1973	(100)	2363	(100)	2750	(100)

Source: CLOSSS. Based on field 17, once-coded records only

TABLE 50

SOCIAL SCIENCE SERIALS (1880-1970): FORM OF SERIAL

TYPE OF SERIAL	Year n/% 1880 n	%	1890 n	%	1900 n	%	1910 n	%	1920 n	%	1930 n	%	1940 n	%	1950 n	%	1955 n	%	1960 n	%	1965 n	%	1970 n	%
Periodical	96	56.8	148	61.2	233	65.8	329	65.8	464	67.4	661	68.6	901	70.9	1272	71.5	1465	71.8	1738	73.2	2090	73.3	2472	73.9
Abstracts	1	0.6	1	0.4	1	0.3	1	0.2	2	0.3	6	0.6	10	0.8	20	1.1	32	1.6	48	2.0	69	2.4	94	2.8
Indexes	3	1.8	4	1.6	4	1.1	4	0.8	6	0.9	8	0.8	9	0.7	11	0.6	13	0.6	14	0.6	18	0.6	22	0.7
Contents lists	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1	2	0.1	3	0.1	4	0.1	5	0.1
Book reviews	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1	2	0.1	5	0.2	8	0.3	8	0.2
Bibliography	1	0.6	1	0.4	1	0.3	1	0.1	3	0.4	5	0.5	7	0.6	13	0.7	18	0.9	24	1.0	30	1.1	36	1.1
Statistics	9	5.3	9	3.7	12	3.4	14	2.8	18	2.6	29	3.0	30	3.2	65	3.7	84	4.1	94	4.0	126	4.4	140	4.2
Research index	1	0.6	1	0.4	0	0.0	0	0.0	0	0.0	1	0.1	3	0.2	3	0.2	3	0.2	2	0.1	2	0.1	4	0.1
Yearbook	9	5.3	14	5.8	15	4.2	23	4.6	29	4.2	38	4.0	43	3.4	54	3.0	60	3.0	65	2.7	69	2.4	74	2.2
Fixed report	33	19.5	42	17.4	56	15.8	82	16.4	111	16.1	143	14.9	166	13.1	223	12.5	236	11.6	245	10.3	280	9.8	313	9.4
Conference proceedings	10	5.9	16	6.6	19	5.4	26	5.2	30	4.4	37	3.9	38	3.0	46	2.6	50	2.5	53	2.2	52	1.8	57	1.7
Legal	0	0.0	0	0.0	0	0.0	2	0.4	2	0.3	3	0.3	5	0.4	6	0.4	7	0.4	8	0.3	9	0.3	10	0.3
Cases	3	1.8	3	1.2	3	0.9	4	0.8	5	0.7	6	0.6	6	0.5	5	0.3	3	0.2	5	0.2	6	0.2	7	0.2
Acc. lists	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1	2	0.2	3	0.2	3	0.2	3	0.1	3	0.1	4	0.1
Monograph series	1	0.6	1	0.4	5	1.4	9	1.8	11	1.6	18	1.9	30	2.4	44	2.5	48	2.4	54	2.3	69	2.4	82	2.4
Others	2	1.2	2	0.8	5	1.4	5	1.0	8	1.2	7	0.7	11	0.9	12	0.7	14	0.7	14	0.6	16	0.6	19	0.6
N	169	(100)	242	(100)	351	(100)	500	(100)	689	(100)	963	(100)	1271	(100)	1779	(100)	2040	(100)	2375	(100)	2851	(100)	3347	(100)

Source: DISISS

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TABLE 51

SOCIAL SCIENCE SERIALS (1880-1970): TYPE OF ISSUING BODY

CATEGORY	Year n/% 1880 n	%	1890 n	%	1900 n	%	1910 n	%	1920 n	%	1930 n	%	1940 n	%	1950 n	%	1955 n	%	1960 n	%	1965 n	%	1970 n	%
Associations	78	46.2	115	47.5	161	45.5	229	45.6	308	44.8	415	43.3	524	41.5	694	39.4	759	37.7	846	36.1	965	34.3	1074	32.5
Publisher	40	23.7	56	23.1	84	23.7	110	21.9	129	18.8	168	17.5	214	16.9	300	17.0	335	16.7	383	16.3	481	17.1	585	17.7
Government	27	16.0	29	11.9	36	10.2	44	8.8	62	9.0	85	8.9	120	9.5	208	11.8	258	12.8	296	12.6	374	13.3	437	13.2
Educational	9	5.3	16	6.6	27	7.6	42	8.4	81	11.8	138	14.4	207	16.4	289	16.4	359	17.8	476	20.3	590	21.0	725	22.0
Political group	2	1.2	5	2.1	8	2.3	14	2.8	19	2.8	25	2.6	28	2.2	28	1.6	31	1.5	32	1.4	31	1.1	37	1.1
International	1	0.6	5	2.1	10	2.8	16	3.2	22	3.2	34	3.6	42	3.3	76	4.3	94	4.7	118	5.0	146	5.2	172	5.2
Comm/Business	5	3.0	6	2.5	12	3.4	17	3.4	28	4.1	41	4.3	56	4.4	75	4.3	77	3.8	79	3.4	88	3.1	105	3.2
Private/Individual	4	2.4	5	2.1	7	2.0	8	1.6	10	1.5	13	1.4	18	1.4	26	1.5	30	1.5	34	1.4	42	1.5	47	1.4
Others	3	1.8	5	2.1	9	2.5	22	4.4	29	4.2	38	4.0	54	4.3	66	3.8	69	3.4	81	3.4	97	3.4	118	3.6
N	169	(100)	242	(100)	354	(100)	502	(100)	688	(100)	957	(100)	1263	(100)	1762	(100)	2012	(100)	2345	(100)	2814	(100)	3300	(100

TABLE 52

SOCIAL SCIENCE SERIALS (1880-197): FREQUENCY OF PUBLICATION

CATEGORY	Year n/% 1880		1890		1900		1910		1920		1930		1940		1950		1955		1960		1965		1970	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Irreg.	3	1.8	5	2.1	11	3.2	22	4.5	28	4.2	38	4.0	51	4.1	69	3.9	77	3.8	95	4.0	129	4.5	159	4.6
Ev. 2 years	0	0.0	0	00.0	1	0.3	1	0.2	2	0.3	3	0.3	5	0.4	7	0.4	7	0.4	8	0.3	8	0.3	11	0.3
Ev. 3 years	0	0.0	0	0.0	2	0.6	2	0.4	3	0.4	3	0.3	3	0.2	4	0.2	4	0.2	4	0.2	4	0.1	4	0.1
Other																								
1 p.a.	74	44.9	96	40.7	116	30.9	153	31.4	199	29.7	254	27.0	307	24.6	414	23.3	468	22.9	532	22.1	613	21.2	692	20.0
2 p.a.	8	4.9	12	5.1	16	4.7	21	4.3	25	3.7	36	3.8	54	4.3	78	4.4	106	5.2	142	5.9	191	6.6	255	7.3
3 p.a.	2	1.2	6	2.5	7	2.0	10	2.1	14	2.1	18	1.9	35	2.8	62	3.5	80	3.9	100	4.2	152	5.3	201	5.8
4 p.a.	17	10.3	31	13.1	59	17.2	88	18.0	132	19.7	215	22.9	301	24.1	454	25.6	530	25.9	648	27.0	791	27.3	963	27.8
5 p.a.	2	1.2	2	0.8	3	0.9	4	0.8	5	0.7	6	0.6	12	1.0	21	1.2	21	1.0	26	1.1	30	1.0	35	1.0
6 p.a.	11	6.7	16	6.8	23	6.7	29	6.0	48	7.1	64	6.8	91	7.3	134	7.5	159	7.8	200	8.3	245	8.5	278	8.0
7 p.a.	0	0.0	0	0.0	1	0.3	3	0.6	3	0.4	4	0.4	4	0.3	4	0.2	4	0.2	4	0.2	4	0.1	5	0.1
8 p.a.	1	0.6	5	2.1	9	2.6	15	3.1	19	2.8	23	2.5	23	1.9	27	1.5	30	1.5	31	1.3	35	1.2	35	1.0
9 p.a.	0	0.0	1	0.4	1	0.3	1	0.2	4	0.6	7	0.8	8	0.6	11	0.6	11	0.5	18	0.8	29	1.0	35	1.0
10 p.a.	3	1.8	3	1.3	4	1.2	11	2.3	16	2.4	18	1.9	22	1.8	27	1.5	28	1.4	31	1.3	43	1.5	46	1.3
11 p.a.	3	1.8	3	1.3	5	1.5	8	1.6	9	1.3	10	1.1	11	0.9	18	1.0	26	1.3	28	1.2	34	1.2	37	1.1
12 p.a.	22	13.3	36	15.3	54	15.8	81	16.6	117	17.4	182	19.4	243	19.5	345	19.4	388	19.0	423	17.6	467	16.1	530	15.3
13 - 23 p.a.	1	0.6	1	0.4	1	0.3	1	0.2	1	0.1	2	0.2	1	0.1	3	0.2	3	0.2	3	0.1	4	0.1	5	0.1
24 - 26 p.a.	1	0.6	2	0.8	3	0.9	7	1.4	9	1.3	12	1.3	17	1.4	28	1.6	30	1.5	34	1.4	38	1.3	44	1.3
27 - 51 p.a.	0	0.0	0	0.0	1	0.3	1	0.2	2	0.3	2	0.2	2	0.2	4	0.2	4	0.2	4	0.2	4	0.1	5	0.1
52 p.a.	16	9.7	16	6.8	25	7.3	29	6.0	33	4.9	42	4.5	55	4.4	64	3.6	68	3.3	71	3.0	75	2.6	94	2.1
53+ p.a.	1	0.6	1	0.4	1	0.3	1	0.2	2	0.3	2	0.2	2	0.2	2	0.1	2	0.1	2	0.1	3	0.1	3	0.1
N	165	(100)	236	(100)	343	(100)	488	(100)	671	(100)	941	(100)	1247	(100)	1776	(100)	2046	(100)	2404	(100)	2899	(100)	3466	(100)

Source: CLOSSS

TABLE 53

PROPORTION OF PERIODICALS TO MONOGRAPH SERIES

Category	Serials current in 1970		Total number of serials current and dead on CLOSSS file.	
	No.	%	No.	%
Periodical	3273	96.7	4556	96.2
Monograph series	112	3.3	180	3.8
TOTAL	3385	(100)	4736	(100)

Source: CLOSSS

TABLE 54

TYPES OF SOCIAL SCIENCE SERIALS

(TOTAL NUMBER OF SERIALS CURRENT AND DEAD ON CLOSSS FILE)

Description of type	Number of titles	Percentage
Periodical journals	3252	69.5
Fixed period report	497	10.6
Statistics	203	4.3
Yearbook	166	3.5
Conference proceedings	139	3.0
Monograph series	136	2.9
Abstracts	115	2.5
Bibliography	48	1.0
Indexes	30	0.6
Legal/legislation	15	0.3
Research index	13	0.3
Book reviews	9	0.2
Cases, case notes	9	0.2
Accessions lists	9	0.2
Content lists	8	0.2
Others	32	0.7
TOTAL	4681	(100)

Source: CLOSSS

TABLE 55

FREQUENCY OF PUBLICATION OF SERIALS (TOTAL NUMBER OF SERIALS CURRENT AND DEAD LISTED ON CLOSSS FILE)

Frequency	Number of titles	Percentage
1 issue per year	1133	23.8
2 issues per year	319	6.7
3 " " "	250	5.3
4 " " "	1194	25.1
5 " " "	37	0.8
6 " " "	331	6.9
7 " " "	9	0.2
8 " " "	41	0.9
9 " " "	44	0.9
10 " " "	65	1.4
11 " " "	46	1.0
12 " " "	753	15.8
13-23" " "	13	0.3
24-26" " "	73	1.5
27-51" " "	8	0.1
52 " " "	128	2.7
53+ " " "	5	0.1
Irregular	287	6.0
Issued every 2 years	20	0.4
Issued every 3 years	4	0.1
TOTAL	4760	(100)

Source: CLOSSS

TABLE 56

TYPES OF ISSUING BODIES OF SOCIAL SCIENCE SERIALS (TOTAL NUMBER OF SERIALS CURRENT AND DEAD ON CLOSSS FILE)

Category	Number of titles	Percentage
Association, societies, etc.	1486	32.1
Commercial publishers	829	17.9
Government	603	13.0
Education institutions (University, colleges etc.)	939	20.3
Political group	135	2.9
International organization	217	4.7
Business and industry	167	3.6
Private individual	69	1.5
Others	188	4.1
TOTAL	4633	(100)

Source: CLOSSS

TABLE 57

NATURE OF CONTENTS OF SOCIAL SCIENCE SERIALS

(TOTAL NUMBER OF SERIALS CURRENT AND DEAD LISTED ON CLOSSS FILE)

Type of material	Occurrence of codes.						Percentage based on single occurrence
		With between 1 and 5 or more other codes					
	Singly	(1)	(2)	(3)	(4)	(5)	
Articles	873	1126	1016	395	102	43	54.6
Abstracts	57	58	52	55	19	11	3.6
Indexes	24	34	27	18	15	8	1.5
Bibliographies	31	75	152	114	49	21	1.9
Contents lists	4	16	38	27	14	6	0.3
Book reviews	14	447	718	343	89	40	0.9
Conference proc.	124	68	110	116	44	29	7.8
Cases, case notes	8	22	76	44	16	20	0.5
Accession lists	7	3	16	14	4	6	0.4
News articles	137	382	588	274	67	37	8.6
Review articles	8	41	243	89	33	21	0.5
Statistics	205	315	143	110	44	23	12.8
Others	106	83	70	49	19	13	6.6
							(100)

Source: CLOSSS

TABLE 58

GEOGRAPHICAL DISTRIBUTION OF SOCIAL SCIENCE SERIALS (TOTAL NUMBER OF SERIALS CURRENT AND DEAD LISTED ON CLOSSS FILE)

Country	Rank	No. titles	Percentage of CLOSSS file
UK	1	1574	31.9
USA	2	1131	23.0
France	3	322	6.5
Germany (Fed Rep)	4	229	4.6
Italy	5	136	2.8
Switzerland	6	106	2.2
Netherlands	7	100	2.0
Canada	8	92	1.9
Australia	9	89	1.8
Belgium	10	87	1.8
India	11	79	1.6
Japan	12	56	1.1
Germany (Pre-1945)	13	50	1.0
USSR	14	44	0.9
Spain	15	40	0.8
South Africa	16 =	39	0.8
Hungary	16 =	39	0.8
Poland	18 =	37	0.8
Sweden	18 =	37	0.8
Austria	20	34	0.7
Czechoslovakia	21	33	0.6
Denmark	22	28	0.6
Brazil	23 =	27	0.5
Rumania	23 -	27	0.5
Argentina	25 =	26	0.5
Mexico	25 =	26	0.5
New Zealand	27	24	0.5
Nigeria	28 =	19	0.4
DDR	28 =	19	0.4
Finland	30 =	18	0.4
Eire	30 =	18	0.4
Yugoslavia	32	15	0.3
Israel	33	14	0.3
Norway	34 =	13	0.3
Chile	34 =	13	0.3
Ethiopia	35	12	0.2
Portugal	36 =	11	0.2
UAR	36 =	11	0.2
Greece	37 =	9	0.2
Hong Kong	37 =	9	0.2
Kenya	37 -	9	0.2
Philippines	37 =	9	0.2
Singapore	37 =	9	0.2
Colombia	42 =	8	0.2
Hawaii	42 =	8	0.2
Venezuela	42 =	8	0.2
Luxembourg	45 =	7	0.1
Pakistan	45 =	7	0.1
Turkey	45 =	7	0.1
TOTAL	-	4765/4927	96.8/100%

Source: CLOSSS

TABLE 59

DISTRIBUTION OF SOCIAL SCIENCE SERIALS BY MAIN COUNTRY GROUPS

Countries	All serials No. titles (1970)	Percentage	Current serials No. titles (1970)	Percentage
Western Europe (28 countries)	2831	57.4	2155	55.6
N. America (US, Canada)	1251	25.3	1030	26.6
Eastern Europe	176	3.6	150	3.9
Japan	56	1.1	47	1.2
Black Africa	90	1.8	72	1.9
Southern Africa	40	0.8	34	0.9
Arab World	36	0.7	28	0.7
USSR	46	0.9	31	0.8
Asia	151	3.1	121	3.1
Central and South America	142	2.9	109	2.8
Oceania/Australasia	117	2.4	98	2.5
TOTAL	4936	(100)	3875	(100)

Source: CLOSSS

TABLE 60

LANGUAGE OF CONTENTS OF SOCIAL SCIENCE SERIALS

(TOTAL NUMBER OF SERIALS CURRENT AND DEAD ON CLOSSS FILES)

Language	Occurrence of language code					Percentage based on single occurrence
	Singly	With between 1 and 4 or more other codes				
		(1)	(2)	(3)	(4)	
English	3211	297	122	63	20	77.7
French	338	166	122	59	20	8.2
German	221	69	83	49	20	5.3
Spanish	122	19	16	12	12	2.9
Italian	83	17	7	16	10	2.0
Russian	27	10	17	29	7	0.7
Portuguese	25	7	1	4	1	0.6
Dutch & Flemish	21	20	7	6	3	0.5
Polish	15	6	1	4	1	0.4
Swedish	13	10	0	1	0	0.3
Japanese	11	13	1	0	1	0.3
Rumanian	11	0	4	1	0	0.3
Czech	10	3	3	4	2	0.2
Danish	9	4	0	0	1	0.2
Norwegian	8	0	1	0	0	0.2
Arabic	0	8	3	1	1	0.0
Croatian	0	6	0	1	0	0.0
Serbian	0	6	0	1	0	0.0
Hungarian	6	0	3	5	2	0.1
TOTAL	4131	-	-	-	-	(100)

Other languages recorded for titles were: Afrikaans, Bengali, Bulgarian, Chinese, Ethiopian, Finnish, Greek, Gujerati, Hebrew, Hindi, Korean, Latin, Latvian, Malay, Persian, Pushto, Sanskrit, Swahili, Turkish, Vietnamese, Welsh.

Source: CLOSSS

TABLE 61

OCCURRENCE OF SEPARATE LANGUAGE EDITIONS IN SOCIAL SCIENCE SERIALS (TOTAL NUMBER OF SERIALS CURRENT AND DEAD ON CLOSSS FILE)

Language edition	Number	Percentage
French	36	39.6
Spanish	17	18.7
English	12	13.2
German	12	13.2
Russian	7	7.7
Portuguese	2	2.2
Afrikaans	1	1.1
Chinese	1	1.1
Dutch	1	1.1
Hebrew	1	1.1
Italian	1	1.1
TOTAL	91	(100)

Source: CLOSSS

TABLE 62

LANGUAGE OF ABSTRACTS CONTAINED IN SOCIAL SCIENCE SERIALS. (TOTAL NUMBER CURRENT AND DEAD LISTED ON CLOSSS FILE)

Language of abstract	Number of occurrences
English	137
French	62
German	44
Russian	23
Spanish	13
Italian	5
Dutch	2
Others*	5

* Arabic, Chinese, Czech, Danish, Portuguese.

Source: CLOSSS

TABLE 63

SUBJECT CONTENT OF SOCIAL SCIENCE SERIALS (TOTAL NUMBER OF SERIALS CURRENT AND DEAD ON CLOSSS FILE)

Subject	Occurrence of codes	With between 1 and 2 or more codes		Total based on all codes	Percentage based on single codes	Index based on all codes
	Singly	(1)	(2)			
Social sciences	325	66	11	402	8.4	7.2
Anthropology	93	46	10	149	2.4	2.7
Archaeology	25	18	5	48	0.6	0.9
Architecture	16	32	6	54	0.4	1.0
Criminology	39	12	1	52	1.0	0.9
Economics	1052	314	52	1418	27.2	25.2
Education	345	121	9	475	8.9	8.5
Environment	83	74	13	170	2.1	3.0
Ergonomics	7	9	1	17	0.2	0.3
Futurology	5	0	1	6	0.1	0.1
Geography	157	59	14	230	4.1	4.1
History	71	52	8	131	1.8	2.3
Law	148	52	5	205	3.8	3.6
Library science	79	12	0	91	2.0	1.6
Linguistics	172	88	5	265	4.5	4.7
Management	96	50	11	157	2.5	2.8
Philosophy	18	15	2	35	0.5	0.6
Political science	544	259	31	834	14.1	14.9
Psychology	204	62	33	299	5.3	5.3
Social policy	213	101	17	331	5.5	5.9
Sociology	138	122	29	289	3.6	5.1
Statistics	35	22	3	60	0.9	1.1
TOTAL	3865	-	-	5618	(100)	(100)

Subject	Single codes %	Single codes Rank	Multiple codes Index	Multiple codes Rank
Economics	27.2	1	25.2	1
Political science	14.1	2	14.9	2
Education	8.9	3	8.5	3
Social sciences	8.4	4	7.2	4
Social policy	5.5	5	5.9	5
Psychology	5.3	6	5.3	6
Linguistics	4.5	7	4.7	8
Geography	4.1	8	4.1	9
Law	3.8	9	3.6	10
Sociology	3.6	10	5.1	7
Management	2.5	11	2.8	12
Anthropology	2.4	12	2.7	13
Environment	2.1	13	3.0	11

TABLE 64

OCCURRENCE OF ABSTRACTS OF ARTICLES IN SOCIAL SCIENCE SERIALS (TOTAL NUMBER OF SERIALS CURRENT AND DEAD ON CLOSSS FILE)

Category	No. titles	Percentage
Abstracts with all articles	537	12.9
Abstracts with some articles	191	4.6
No abstracts	3425	82.5
TOTAL	4153	(100)

Source: CLOSSS

TABLE 65

SERIALS CONTAINING DIFFERENT NUMBERS OF ARTICLES PUBLISHED PER YEAR IN SOCIAL SCIENCE SERIALS (TOTAL NUMBER OF SERIALS CURRENT AND DEAD ON CLOSSS FILE)

Category	No. titles		Percentage	
	(a)	(b)	(a)	(b)
0 articles (but contains other material	493	-	12.1	-
Articles per year				
1	498	498	12.2	13.9
2 - 4	139	139	3.4	3.9
5 - 9	337	337	8.3	9.4
10 - 14	346	346	8.5	9.7
15 - 19	325	325	8.0	9.1
20 - 29	518	518	12.7	14.5
30 - 39	327	327	8.0	9.1
40 - 49	218	218	5.4	6.1
50 - 59	119	119	2.9	3.3
60 - 69	114	114	2.8	3.2
70 - 79	82	82	2.0	2.3
80 - 89	63	63	1.5	1.8
90 - 99	50	50	1.2	1.4
100+	442	442	10.9	12.4
TOTAL	4071	3578	(100)	(100)

Source: CLOSSS

TABLE 66

SIZE OF SECONDARY LITERATURE IN THE SOCIAL SCIENCES

Date	Numbers of new titles recorded	Mortalities recorded	Cumulative no. titles (Current & dead)	Cumulative no. titles current	Date	Numbers of new titles recorded	Mortalities recorded	Cumulative no. titles (Current & dead)	Cumulative no. titles current
1972	1		748						
1971	8	1	747	707	1936	6	1	130	126
1970	2	2	741	702	1935	3	0	124	121
1969	9	1	739	702	1934	7	0	121	118
1968	28	3	728	692	1933	4	0	114	111
1967	24	3	700	667	1932	4	1	110	107
1966	22	0	676	646	1931	3	0	106	104
1965	31	3	654	624	1930	4	1	103	101
1964	23	2	623	596	1929	3	0	99	98
1963	23	5	600	575	1928	6	0	96	95
1962	22	0	577	557	1927	6	0	90	89
1961	20	2	555	535	1926	1	0	84	83
1960	26	0	535	517	1925	5	0	83	82
1959	17	3	509	491	1924	1	0	78	77
1958	22	0	492	477	1923	2	0	77	76
1957	13	0	469	454	1922	3	0	75	74
1956	26	0	456	441	1921	2	0	72	71
1955	23	1	430	415	1920	1	0	70	69
1954	28	1	407	393	1919	2	0	69	68
1953	20	1	379	366	1918	1	0	67	66
1952	30	1	349	337	1917	1	0	66	65
1951	23	2	328	317	1916	2	0	65	64
1950	32	0	305	296	1915	8	0	63	62
1949	30	0	273	264	1914	2	0	55	54
1948	24	2	243	234	1913	3	1	53	52
1947	25	1	219	212	1912	2	0	50	50
1946	18	0	194	188	1911	1	0	48	48
1945	11	0	176	170	1910	4	0	47	47
1944	3	1	165	159	1909	1	0	43	43
1943	1	0	162	157	1908	6	0	42	42
1942	3	1	161	156	1907	5	0	36	36
1941	5	0	158	154	1905	1	0	31	31
1940	7	0	153	149	1903	1	0	30	30
1939	5	0	146	142	1902	1	0	29	29
1938	3	0	141	137	1901	3	0	28	28
1937	8	0	138	134	1900	2	0	25	25

Source: DISISS

TABLE 67

RATIO OF PRIMARY TO SECONDARY LITERATURE IN THE SOCIAL SCIENCES 1880 - 1970

Date	(1) No. serials (Total)	(2) No. journals	(3) No. secondary serials	Ratios (1)/(3)	Ratios (2)/(3)
1880	169	96	5	33.8	19.2
1890	242	148	6	40.4	24.7
1900	354	233	6	59.0	38.8
1910	500	329	6	83.3	54.8
1920	689	464	11	62.6	42.2
1930	963	661	19	50.6	35.3
1940	1271	901	26	48.9	34.6
1950	1779	1272	46	38.7	27.7
1955	2040	1465	67	30.4	21.8
1960	2375	1738	94	25.3	18.5
1965	2851	2090	129	22.1	15.5
1970	3347	2472	165	20.3	15.0

Source: CLOSSS and Table 40.

TABLE 68

FREQUENCY OF ISSUE OF SECONDARY SERVICES IN THE SOCIAL SCIENCES

Category (Issues per year)	Number of titles	Percentage
Irregular	5	0.8
1	63	10.1
2	43	6.9
3	18	2.9
4	189	30.3
5	5	0.8
6	57	9.1
7 - 9	9	1.4
10	27	4.3
12	169	27.1
18 - 22	7	1.1
24 - 26	19	3.0
30 - 36	3	0.5
50 - 52	10	1.6
TOTAL	624	(100)

Source: DISISS

TABLE 69

COUNTRY OF ORIGIN OF SECONDARY SERVICES IN THE SOCIAL SCIENCES

Country (5 or more services recorded)	Number	Percentage
USA	265	31.2
France	136	16.0
UK	93	11.0
Federal Germany	66	7.8
USSR	51	6.0
Netherlands	41	4.8
Belgium	28	3.3
Romania	20	2.4
India	24	2.8
Spain	22	2.6
Switzerland	18	2.1
Hungary	14	1.6
Poland	11	1.3
Japan	10	1.2
Italy	10	1.2
DDR	11	1.3
Bulgaria	10	1.2
Sweden	10	1.2
Canada	99	1.1
Brazil	6	0.7
Australia	5	0.6
Czechoslovakia	2	0.2
Portugal	2	0.2
Argentina	1	0.1
Austria	1	0.1
Denmark	1	0.1
Greece	1	0.1
Trinidad	1	0.1
TOTAL	849	(100)

Source: DISISS

TABLE 70

SUBJECT DISTRIBUTION OF SECONDARY SERVICES IN THE SOCIAL SCIENCES

Subject	Number of titles	Percentage
General social science	178	22.8
Economics	118	15.1
Education	91	11.7
Political science	61	7.8
Social welfare	53	6.8
Law	40	5.1
Sociology	38	4.9
Anthropology	33	4.2
Management	35	4.5
Psychology	26	3.3
Environment and planning	23	2.9
Geography	18	2.3
Librarianship	18	2.3
History	15	1.9
Linguistics	13	1.7
Statistics	11	1.4
Criminology	7	0.9
Ergonomics	3	0.4
TOTAL	781	(100)

Source: DISISS

TABLE 71

THE 45 COUNTRIES PRODUCING 1000 OR MORE MONOGRAPH TITLES IN 1969

ntry	Number of titles 1969 [1]	Rank in 1969	Rank in 1962	Change in position 1962-1969
USSR	74311	1	1	0
China [2]	-	no data	2	-
USA	62083	2	5	+3
Germany (Fed.)	33454	3	6	+3
UK	32321	4	3	-1
Japan	31009	5	4	-1
France	21958	6	7	+1
Spain	20031	7	10	+3
India	13733	8	8	0
Netherlands	11204	9	9	0
Poland	9413	10	14	+4
Yugoslavia	8708	11	16	+5
Italy	8450	12	12	0
Czechoslovakia	8210	13	11	-2
Switzerland	7505	14	17	+3
Romania	7410	15	13	-2
Sweden	7404	16	18	+2
Finland	5876	17	33	+16
Turkey	5369	18	20	+2
Portugal	5340	19	21	+2
Germany (DDR)	5159	20	15	-5
Austria	5104	21	28	+7
Belgium	5089	22	29	+7
Denmark	4978	23	22	-1
Hungary	4831	24	19	-5
Brazil	4812	25	23	-2
Argentine	4395	26	30	+4
Australia	3939	27	37	+10
Norway	3935	28	32	+4
Canada	3659	29	27	-2
Taiwan	3616	30	34	+4
Bulgaria	3548	31	25	-6
Pakistan	3312	32	38	+6
Mexico	2966	33	24	-9
Korea (Republic)	2501	34	26	-6
Thailand	2457	35	40	+5
S. Africa	2190	36	41	+5
Israel	2038	37	35	-2
Burma	1926	38	no data	no data
UAR	1872	39	31	-8
Greece	1822	40	42	+2
Ceylon	1586	41	36	-5
Iran	1341	42	no data	no data
New Zealand	1275	43	43	0
Chile	1100	44	44	0
Nigeria	1093	45	-	-
Vietnam	-	-	39	-

Source: UNESCO Statistical Yearbook Table 5.2

[1] Brazil (1964); Burma (1968); Iran (1967); Pakistan (1967)

[2]

TABLE 72

PROPORTION OF BOOK TITLES PRODUCED BY THE TOP 45 AND TOP 12 PRODUCERS (1969)

Year	World title production (total)	Production of top 45 producers (1969)[1]	Percentage share of top 45 producers of[2] world production	Production of top 12 producers (1969)[1]	Percentage share of top 12 producers of world production	Percentage share of top 12, of top 45 producers
1960	364000	310846	85.3	216889	59.5	69.7
1961	380000	311873	82.0	222076	58.4	71.2
1962	388000	327628	84.4	235068	60.5	71.7
1963	399000	360653	90.3	254181	63.7	70.4
1964	408000	361370	88.5	252668	61.9	69.9
1965	450000	399340	88.7	298163	66.2	74.6
1966	460000	391042	85.0	270202	58.7	69.0
1967	478000	404159	84.5	312262	65.3	77.2
1968	487000	424983	87.2	318747	65.4	75.0
1969	496000	450080	90.7	329161	66.3	73.1
1970	546000	482432	88.3	365024	66.8	75.6

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[1] This total is based on classified and non-classified items and includes the larger USA total from 1965 onwards

[2] These values will be distorted by gaps in the data collection and are not individually comparable

TABLE 73

WORLD BOOK PRODUCTION: SIZE BY MAIN SUBJECT CLASSES

Year[1]	Class 0	1	2	3	4	5	6	7	8	9	Annual[1] total
1961	11049	5548	13897	66527	10287	21138	72819	17185	76090	22434	316974
1962	10051	5819	12064	71878	9059	19190	71349	18493	73500	21478	312881
1963	13988	6605	15564	85374	10222	22288	77491	18070	84070	22926	356598
1964	14073	6950	17264	75248	13710	26988	76842	21393	80050	28171	360689
1965	14432	7549	15602	77154	14536	30144	81922	20573	81290	28181	371383
1966	13922	7612	15247	81650	14995	31196	81909	21059	85480	28082	381152
1967	14213	8542	16317	84779	14757	30153	82666	21553	87616	29703	390299
1968	13666	8249	15927	90027	14406	30933	85196	21849	84667	30819	395739
1969	15182	9012	17102	95206	14930	30955	88105	24357	88613	31016	414478
1970	14165	10237	17534	105371	15628	32675	91654	26650	94180	32368	440462

Source: UNESCO Statistical Yearbook. Table 5.2

[1] Annual total comprises subject classified items only; see Table 1(column 1) for grand total.

TABLE 74

BOOK PRODUCTION OF THE TOP 45 PRODUCERS (1969): SIZE BY MAIN SUBJECT CLASSES

Year	Class 0	1	2	3	4	5	6	7	8	9	Annual total[1]
1960	8793	5518	12966	58320	10631	19420	70656	22400	74189	21632	304525
1961	10077	5384	13145	61873	10024	20988	70586	16932	72869	21885	303763
1962	9900	5950	13112	71340	8833	19721	71405	18629	75920	21668	316478
1963	13774	6808	15828	86951	10372	22834	79158	18209	81867	23743	359542
1964	12926	6746	16535	75524	13659	26604	77210	20228	77799	27119	354350
1965	13757	7654	15717	76357	15343	30204	81976	21024	80753	31632	374417
1966	13629	7903	15344	81968	14251	31267	81943	21465	87313	28437	383520
1967	13558	8134	15027	81853	11850	28262	82129	21096	82078	27893	371880
1968	13649	8266	15529	88854	14154	30459	84409	21624	83859	31048	391851
1969	14642	8973	16682	93[illegible]	14516	30726	87323	24050	87649	30991	408673
1970	13930	10155	16818	102253	15164	32236	91020	26388	92723	31493	432270

Source: UNESCO Statistical Year Book Table 5.2

[1] Actual row total; thus, includes classified items only. Includes the smaller USA figures from 1965 onwards

TABLE 75

BOOK PRODUCTION OF THE TOP 12 PRODUCERS (1969): SIZE
BY MAIN SUBJECT CLASSES

Year	Class										Annual total[1]
	0	1	2	3	4	5	6	7	8	9	
1960	5041	3978	8389	39029	7349	14437	54602	11549	51990	14393	210757
1961	6609	3928	8426	40760	7077	14728	53879	10977	52411	14606	213401
1962	6629	4504	9237	48764	5951	13826	53469	12806	54024	15001	224211
1963	8952	4981	10370	58677	7368	16437	59565	11832	57920	15939	252041
1964	8156	4859	9420	50415	9358	19431	57680	12822	53601	18156	243898
1965	9054	5658	10249	53476	9516	21972	63113	14379	55325	23100	265842
1966	8361	5913	9614	57127	9674	22810	61764	14014	63739	20367	273363
1967	9691	6387	10302	59783	10182	20489	62779	14385	61856	20346	276200
1968	9685	6340	10587	63262	10028	22517	63312	15230	61386	21497	283844
1969	9571	5572	10356	66436	10390	21804	64538	15768	61678	21081	287104
1970	9880	7630	11473	77381	10575	23258	67659	18353	68302	22720	317231

Source: UNESCO Statistical Yearbook. Table 5.2

[1] Annual total comprises subject classified items only; includes lower total for USA from 1965.

TABLE 76

SOCIAL SCIENCES BOOK PRODUCTION: TOP 12 PRODUCERS

Year	Class[1]																				Annual total
	2	*	4	*	5	*	8	*	9	*	10	*	11	*	18	*	22	*	23	*	
1965	4489	9	4937	9	18108	9	10344	9	2614	9	720	7	7187	9	7600	7	4545	9	12099	9	72633
1966	4605	9	5095	9	18783	9	11695	9	2697	9	705	7	7017	9	7342	7	4809	9	12089	9	74837
1967	5429	10	5452	10	20897	10	11502	10	2426	10	827	8	7759	10	8358	9	5359	10	12856	10	80865
1968	5992	11	5625	10	21740	10	13322	10	2986	10	821	8	8022	11	8174	8	5309	10	13442	10	85433
1969	6780	11	6296	11	23686	11	13790	11	3209	11	1164	9	8273	11	9301	9	6336	11	14151	11	92986
1970	7185	11	7426	11	29919	11	16305	11	3582	11	1315	9	7292	11	9490	9	6805	11	15173	11	104492

Source : DISISS Working Paper no. 7, Tables 69-79.

[1] 2 : Philosophy, psychology, 4 : Sociology, statistics, 5 : Politics, economics, 8 : Education, 9 : Trade, 10 : Ethnology, 11 : Linguistics, philology, 18 : Commerce, 22 : Geography, 23 : Biography, history.

[2] * = Number of countries sampled.

TABLE 77

NUMBER OF TRANSLATIONS PUBLISHED BY SUBJECT

Date	Class 0	1	2	3	4	5	6	7	8	9	Total
1960	-	= 3		18302	= 7/8		3945		9005	= 3	31384
1961	-	= 3		18965	= 7/8		4308		9506	= 3	32924
1962	107	1069	2254	3683	113	1713	2658	1245	17207	2727	32776
1963	172	1445	2245	3452	114	2026	2892	1401	18400	3077	35224
1964	236	1537	2613	3809	121	2293	3129	1488	18920	3338	37484
1965	196	1461	2673	3423	160	2392	3169	1596	17860	3142	36072
1966	180	1681	2520	4240	168	2500	3147	1542	20179	3463	39620
1967	241	1746	2804	4127	169	2355	3032	1595	19616	3753	39438
1968	264	1564	2486	4212	176	2341	3048	1660	17913	3153	36817
1969	269	1831	2630	4548	154	2522	3416	1896	17464	3422	38152
1970	161	1854	2663	5011	-	2505	3429	1865	19812	3369	40039

Source: UNESCO Statistical Yearbook

TABLE 78

NUMBER OF TRANSLATIONS PUBLISHED BY MAIN ORIGINAL LANGUAGES

Original language [1]	1970		1966		1962	
	Total	Social sciences	Total	Social sciences	Total	Social sciences
English	16471	1746	14228	1274	11112	835
French	5624	600	5314	430	4095	300
German	3899	452	3912	299	3026	285
Russian	3761	877	4353	804	5022	1401
Italian	1047	82	881	85	739	45
Swedish	701	44	696	39	449	20
Czech	661	118	925	140	994	128
Hungarian	552	56	622	53	202	11
Danish	540	27	404	10	327	4
Spanish	520	75	827	38	711	35
Others	6263	4077	7458	1068	6099	619
TOTAL	40039	5011	39620	4240	32776	3683

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[1] Languages translated more than 500 times in 1970.

TABLE 79

TRANSLATIONS FROM LANGUAGES MOST FREQUENTLY TRANSLATED BY COUNTRY OF PUBLICATION

Country of publication	1962/Language of origin						
	English	French	German	Russian	Italian	Others	Total
UK	4	323	213	77	40	133	790
USA	2	383	324	155	74	378	1316
France	770	39	200	81	73	325	1488
Germany	1419	592	7	302	81	693	3094
USSR	481	162	205	2344	34	1633	4859
Italy	361	296	115	50	27	137	986

Country of Publication	1970/Language of origin						
	English	French	German	Russian	Italian	Others	Total
UK	2	208	186	29	56	165	646
USA	14	585	588	397	132	860	2576
France	1042	39	283	79	95	362	1900
Germany	3297	817	143	384	149	1117	5907
USSR	393	132	159	1336	21	1076	3117
Italy	503	403	181	36	3	233	1359

Source: UNESCO Statistical Yearbook

SUMMARY OF GROWTH DATA; WORLD, TOP 45 AND TOP 12 PRODUCERS

Sample	Classes (UDC)	Linear regression coefficient Intercept (α)	Linear regression coefficient Slope (β)	Time period	Overall percentage change in annual production	Size in 1970	Projected size in: 1975	Projected size in: 1980	Projected size in: 1985
ALL TITLES									
WORLD		171.3	18.081	1951-1970	214.0	545000	620000	710000	800000
WORLD		338.9	17.1	1960-1970	50.0	546000	610000	700000	790000
TOP 45		285.1	16.49	1960-1970	55.0	482000	550000	635000	720000
TOP 12		199.748	9.845	1960-1970	69.0	365000	420000	490000	560000
'FUNCTIONAL'									
WORLD		277.999	16.073	1961-1970	48.0	452000	520000	600000	680000
TOP 45		211.548	15.045	1960-1970	66.0	389000	460000	540000	620000
TOP 12		143.348	12.836	1960-1970	85.0	297000	360000	410000	470000
'NON-FUNCTIONAL'									
WORLD		74.533	1.5212	1961-1970	24.0	94000	97000	105000	113000
TOP 45		73.253	1.473	1960-1970	24.0	93000	96000	104000	111000
TOP 12		51.729	1.227	1960-1970	33.0	68000	73000	80000	87000
SOCIAL SCIENCES ,									
WORLD	3,9	85.227	4.655	1961-1970	55.0	137000	155000	175000	195000
WORLD	3	63.347	3.450	1961-1970	36.0	105000	116000	133000	150000
TOP 45	3,9	78.743	1.693	1960-1970	65.0	134000	155000	178000	201000
TOP 45	3	58.343	3.564	1960-1970	43.0	102000	116000	133000	150000
TOP 12	3,9	50.52	4.039	1960-1970	87.0	100000	115000	135000	155000
TOP 12	3	37.218	3.1	1960-1970	49.0	77000	88000	103000	118000
PURE & APPLIED SCIENCES									
WORLD	5	19.567	1.450	1961-1970	55.0	33000	41000	49000	56000
WORLD	6	72.193	1.603	1961-1970	25.0	91000	96000	104000	112000
WORLD	5,6	88.936	3.539	1961-1970	32.0	124000	142000	160000	178000
TOP 45	5	18.38	1.37	1960-1970	36.0	32000	41000	48000	56000
TOP 45	6	67.92	1.98	1960-1970	29.0	91000	100000	110000	120000
TOP 45	5,6	86.089	3.364	1960-1970	36.0	123000	140000	156000	172000
TOP 12	5	13.203	1.005	1960-1970	32.0	23000	29000	34000	39000
TOP 12	6	52.163	1.344	1960-1970	22.0	67000	74000	81000	88000
TOP 12	5,6	61.456	2.818	1960-1970	54.0	91000	106000	120000	134000
HUMANITIES									
WORLD	1,2,8	92.063	2.583	1961-1970	27.0	122000	133000	145000	157000
WORLD	1,2,8,9	112.867	3.897	1961-1970	13.0	154000	171000	190000	209000
TOP 45	1,2,8	89.244	2.477	1960-1970	29.0	120000	128000	140000	152000
TOP 45	1,2,8,9	109.908	3.182	1960-1970	32.0	151000	161000	177000	193000
TOP 12	1,2,8	61.666	2.001	1960-1970	36.0	87000	93000	103000	113000
TOP 12	1,2,8,9	75.091	2.909	1960-1970	35.0	110000	120000	135000	150000

Source : DISISS Working Paper no. 7, Tables 1, 2, 3, 4, 6 and 8

TABLE 81

SOCIAL SCIENCE BOOK PRODUCTION OF THE TOP 12 PRODUCERS:

SUMMARY OF GROWTH DATA.

Sample	Time period	Linear regression coefficient		Overall percentage change in annual production	Size in 1970	Projected size in:		
		Intercept (α)	Slope (β)			1975	1980	1985
All titles	1965-70	63.34	6.25	43.9	104000	131000	162000	193000
2. Philosophy; Psychology	1965-70	3.668	0.591	66.0	7200	10000	12800	15600
4. Sociology; Statistics	1965-70	4.180	0.463	50.0	7400	9400	11700	14000
5. Politics; Economics	1965-70	14.699	2.143	65.0	29900	38000	48400	58800
8. Education	1965-70	9.207	1.031	57.6	16300	20500	25500	30500
9/18. Trade; Commerce	1965-70	9.06	0.64	28.0	13000	16200	19400	22600
22/23. Geography; History	1965-70	14.992	1.097	32.0	22000	27000	32300	37600
		Exponent (α)	(β)					
All titles	1965-70	65.67	1.075	43.9	104000	202000	338000	564000
5. Politics; Economics	1965-70	15.70	1.102	65.0	29900	46000	75800	123100
8. Education	1965-70	9.45	1.087	57.6	16300	23700	35900	54500
22/23. Geography; History	1965-70	15.32	1.059	32.0	22000	28800	38300	51000

Source: DISISS Working Paper no. 7, Table 65.

TABLE 82

SUMMARY OF GROWTH DATA
FOR MAIN BOOK PRODUCERS

Country/Class	Time period	Linear regression coefficient intercept (α)	Slope (β)	Overall percentage change in annual production	Size in 1970	Projected size in: 1975	1980	1985
USSR								
3	1960-70	14.145	0.4	33.9	19300	20500	22500	24500
5	1960-70	4.298	0.229	29.7	6600	7700	8800	9900
5/6	1960-70	39.783	-0.127	- 0.8	41600	No	growth	indicated
3/9	1960-70	16.398	0.373	27.9	21300	22400	24200	26000
'Functional'	1960-70	64.294	0.345	6.2	71000	70000	71700	73400
All titles	1960-70	76.020	0.027	- 3.7	78900	76500	76700	76900
USA								
3	1960-70	1.520	0.502	459.7	8400	9500	12000	14500
5	1960-70	1.568	0.114	131.3	2500	3600	4300	5000
5/6	1960-70	3.725	0.316	130.6	6800	8700	10300	11900
3/9	1960-70	4.056	0.589	241.7	12600	13500	16500	19500
'Functional'	1960-70	11.174	1.248	182.5	27200	31000	37500	44000
All titles	1960-70	17.813	1.269	135.9	35400	38500	45000	51500
UK								
3	1960-70	3.398	0.188	76.7	6000	6400	7300	8200
5	1960-70	1.713	0.155	78.7	3400	4150	4900	5650
5/6	1960-70	5.418	0.282	44.2	8300	9900	11300	12700
3/9	1960-70	5.358	0.378	66.8	9900	11400	13300	15200
'Functional'	1960-70	14.209	0.914	57.7	24400	28500	33000	37500
All Titles	1960-70	22.169	0.967	40.6	33400	37500	42500	47500
GERMANY (Federal Republic)								
3	1960-70	3.794	0.637	170.6	13800	14000	17000	20000
5	1960-70	0.756	0.148	115.1	2600	3100	3900	4700
5/6	1960-70	2.316	0.32	88.2	7100	7400	9000	10600
3/9	1960-70	5.380	0.797	154.3	17500	18000	22000	26000
'Functional'	1960-70	11.818	1.591	129.5	36200	36500	44000	51500
All titles	1960-70	16.490	1.782	115.0	45400	45000	54000	63000
FRANCE								
3	1960-70	0.383	0.376	319.0	5100	6500	8400	10300
5	1960-70	0.844	0.088	63.6	1200	2250	2700	3150
5/6	1960-70	1.098	0.447	184.5	4100	8200	10500	12700
3/9	1960-70	1.635	0.463	166.5	7100	9000	11300	13600
'Functional'	1960-70	5.756	1.039	123.4	17100	22500	27750	33000
All titles	1960-70	9.887	1.172	93.1	22900	28500	34500	40500
JAPAN								
3	1960-70	4.887	0.217	74.7	7100	8400	9550	10700
5	1960-70	0.543	0.156	155.4	2100	3100	3900	4700
5/6	1960-70	2.601	0.53	106.0	7800	11100	13800	16500
3/9	1960-70	5.733	0.394	82.6	9500	12000	14000	16000
'Functional'	1960-70	11.613	1.21	89.2	23600	31000	37000	43000
All titles	1960-70	20.653	1.024	32.0	31200	37000	42000	47000

Source: DISISS Working Paper no. 7, Tables 26, 29, 32, 35, 38 and 41.

TABLE 83

BOOK PRODUCTION OF THE TOP 12 PRODUCERS (1969): COMPARISON OF PRODUCTION IN 1960 AND 1969 BY SUBJECTS

	Country/Year																							%
Class	USSR		USA		Ger(Fed.)		UK		Japan		Fr.		Sp.		Ind.		Neth.		Pol.		Yug.		Italy	
	60	69	60	69	60	69	60	69	60	69	60	69	60	69	60	69	60	69	60	69	60	69	60	69
0	2.9	2.8	1.9	2.7	3.3	6.1	0.3	1.8	1.6	2.4	1.1	4.1	6.5	6.1	2.0	2.8	2.2	1.5	3.1	2.7	2.2	2.8	1.8	4.0
1	0.8	1.0	3.2	3.3	2.2	2.5	1.9	2.6	2.6	2.8	4.6	2.6	2.2	2.1	1.2	2.6	1.8	3.1	0.9	0.9	1.1	0.6	3.3	3.8
2	0.5	0.2	7.4	6.0	7.2	5.7	5.5	3.9	1.9	1.6	7.8	4.7	10.7	7.5	9.6	7.8	4.1	4.2	1.2	1.4	1.0	2.2	6.3	7.5
3	18.9	24.1	10.0	21.1	24.1	28.4	14.3	17.1	17.1	22.3	10.3	19.3	12.9	12.9	30.8	33.6	13.9	18.7	18.7	21.7	30.6	45.4	14.7	23.1
4	2.6	2.8	1.5	1.7	3.3	4.8	3.1	1.9	3.5	1.9	1.9	1.6	1.6	3.2	2.5	1.9	17.6	18.9	2.9	2.9	2.8	1.6	5.9	3.6
5	6.6	8.5	7.3	10.2	5.6	6.7	7.9	9.5	3.4	5.8	6.4	5.7	4.0	5.0	5.4	4.4	13.7	12.5	10.9	9.1	6.4	3.3	7.4	5.4
6	48.5	43.5	12.5	15.4	12.2	9.7	16.3	15.9	12.5	18.8	5.7	19.3	9.7	14.0	3.3	8.7	9.9	8.3	30.8	36.4	17.4	8.9	6.0	9.4
7	3.7	3.2	5.7	8.9	5.4	5.9	4.9	8.0	4.8	7.7	14.5	6.1	4.2	4.1	1.6	1.4	5.0	4.1	3.8	4.2	7.0	6.4	6.9	7.2
8	12.1	10.9	35.9	19.4	28.1	20.6	35.0	27.4	24.0	25.8	35.5	23.8	38.4	37.2	36.9	28.1	14.4	23.3	22.1	14.5	24.3	25.2	35.8	28.9
9	2.9	2.4	14.7	11.2	8.5	9.0	10.7	11.9	4.8	8.1	12.1	12.0	9.3	6.4	6.3	9.2	2.3	5.5	5.2	5.8	4.5	3.2	11.9	7.0

Source: Tables 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58 and 61. (DISISS Working Paper no. 7)

TABLE 84

SOCIAL SCIENCES (CLASS 3) AS A PERCENTAGE OF ANNUAL BOOK PRODUCTION IN THE TOP 12 COUNTRIES

%

Year	USSR	USA	GER(Fed.)	UK	JAP	FR	SP	IND	NETH	POL	YUG	ITAL
1960	18.9	10.0	24.1	14.3	17.1	10.3	12.9	30.8	13.9	18.7	30.6	14.7
1961	18.9	13.3	27.5	16.4	14.2	9.9	11.5	32.9	19.9	18.8	35.8	16.3
1962	20.0	14.0	27.4	17.3	38.2	9.6	19.3	21.5	13.6	19.5	27.5	16.0
1963	25.1	14.8	28.4	17.3	38.7	13.8	18.7	30.0	15.0	18.1	20.0	16.5
1964	19.7	17.6	26.4	15.9	16.1	13.7	19.3	34.4	13.9	18.7	36.1	n.d
1965	21.0	16.8	26.0	15.5	17.0	12.6	14.9	38.1	12.3	19.2	35.9	17.8
1966	21,3	17.4	24.2	14.5	25.5	17.9	15.7	37.9	17.0	18.4	31.9	17.7
1967	22.7	20.1	28.0	15.2	21.8	19.3	14.2	34.1	17.2	18.7	29.6	20.4
1968	23.2	21.6	30.9	16.0	22.6	14.4	14.9	30.6	18.7	19.8	35.6	21.5
1969	24.1	21.1	28.4	17.1	22.3	19.3	12.9	33.6	18.7	21.7	45.4	23.1
1970	24.4	23.6	30.3	18.0	22.7	24.3	15.6	33.9	18.7	21.5	45.4	22.7

Source: Tables 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58 and 61; Table 9 (DISISS Working Paper no. 7)

TABLE 85

RANKING OF BOOK PRODUCING COUNTRIES IN 1969

Country	Overall rank as book producer (all subjects)	Rank as social science producer ('old' data class 3 & 9)		Rank as social science producer ('old' data class 3 only)		Rank as social science producer ('new' data including history and geography)		Rank as social science producer ('new' data excluding history and geography)	
		Size	Rank	Size	Rank	Size	Rank	Size	Rank
USSR	1	19862	1	18040	1	23758	1	21986	1
USA	2	7546	5	4932	5	8370	5	5729	5
Germany (Federal Republic)	3	12540	2	9502	2	11878	2	8840	2
UK	4	9371	4	5526	4	10713	4	6868	4
Japan	5	9456	3	6939	3	11344	3	8827	3
France	6	6872	6	4237	7	7173	6	4682	6
Spain	7	3888	9	2593	9	4471	8	3176	10
India	8	5891	7	4623	6	5503	7	4235	7
Netherlands	9	2711	10	2090	10	-	-	-	-
Poland	10	2595	11	2048	11	3749	9	3202	9
Yugoslavia	11	4340	8	3955	8	3620	10	3335	8
Italy	12	2545	12	1951	12	2397	11	1803	11

Source: Appendix A, Table 8 and Table 35. (DISISS Working Paper no. 7)

TABLE 86

SUMMARY OF SUBJECT COMPOSITION DATA FOR TOP 12
PRODUCERS (1960-1970)

Country and rank (1969)	Social sciences(class 3) as proportion of all monographs. (Average 1960-1970)	Pure sciences (class 5) as proportion of all monographs. (Average 1960-1970)	Applied sciences(class 6) as proportion of all monographs. (Average 1960-1970)
1 USSR	21.8	7.4	45.7
2 USA	17.3	8.8	13.2
3 Germany (Fed.)	27.4	5.8	9.4
4 UK	16.1	9.3	16.1
5 Japan	23.3	6.6	15.6
6 France	15.0	8.1	10.8
7 Spain	15.4	5.0	11.9
8 India	32.5	4.4	7.1
9 Netherlands	16.3	12.3	8.2
10 Poland	19.4	10.9	35.2
11 Yugoslavia	34.0	6.2	12.1
12 Italy	19.8	7.0	10.0

Source: Tables 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58 and 61. (DISISS Working Paper no. 7)

TABLE 87

SUMMARY OF DATA ON SIZE OF SOCIAL SCIENCE JOURNALS

(Total number of pages (top line) and number of articles (bottom line) per year of each journal)

Title	1920	1925	1930	1935	1940	1945	1950	1955	1960	1962	1964	1966	1968	1970	1972
American J. of Orthopsychiatry (ND)	- -	- -	558 38	434 39	935 94	752 68	888 61	888 59	888 81	985 82	1000 70	[illegible] 69	968 75	910 73	924 60
American J. of of Psychiatry (NA)	725 36	890 37	1086 50	1194 73	1519 96	864 130	960 117	1036 177	1152 247	1223 273	1300 263	1642 241	1867 261	1744 273	800 250
American Journal of Sociology (QA)	822 31	856 30	1080 65	868 52	960 43	586 58	622 48	661 53	661 46	728 47	747 69	706 50	[illegible] 44	1197 64	1601 89
American Sociological Review (AA)	- -	- -	- -	1046 54	998 64	820 71	840 82	778 65	1001 80	943 80	951 61	905 57	1037 58	1155 55	781 63
American Political Science Review (MA)	- -	967 40	1141 50	1276 57	1295 53	1285 51	1180 47	1248 42	1098 37	1094 46	1188 36	1202 44	1523 55	1460 52	1451 53
British Journal of Educational Psychology (NC) (UK)	- -	-	331 19	335 18	256 16	158 16	208 19	215 22	300 29	323 36	347 37	355 40	340 48	369 43	344 32
Economic Journal (DA) (UK)	571 27	674 26	723 29	815 27	592 20	490 17	874 29	755 33	587 36	1054 34	1074 27	1005 28	1067 29	1077 21	1531 51
Economica (DA) (UK)	311 25	368 26	364 15	197 26	448 23	267 21	465 26	384 24	403 25	454 33	464 31	507 31	478 35	450 32	479 31
Geography (IA) (UK)	407 65	528 72	361 26	338 22	210 21	130 13	272 23	294 35	394 36	422 38	462 43	434 42	459 40	498 40	402 37
Howard Journal of Penology (CA) (UK)	95 9	77 9	117 18	117 20	53 8	68 12	56 12	73 11	75 11	68 8	69 7	64 7	54 9	64 7	80 6
Journal of Psychology (NA)	- -	- -	- -	791 64	805 65	745 57	871 65	937 82	754 75	994 88	971 102	900 93	912 109	772 104	1074 154
Journal of Social Psychology (NA)	- -	- -	565 38	493 29	994 64	536 33	608 14	682 50	816 74	1206 116	1132 104	1028 105	836 118	[illegible] 158	710 120
Language (KA)	- -	162 12	842 14	868 22	859 35	293 25	538 28	591 25	561 21	476 22	643 25	872 38	[illegible] 30	780 30	1000 34
Man (BA) (UK)	191 15	199 18	192 58	284 90	199 44	136 23	140 27	188 27	188 26	188 47	195 21	610 41	710 34	762 38	707 37
Occupational Psychology (NA) (UK)	- -	390 41	471 24	450 42	233 17	211 23	266 26	254 21	288 22	245 23	232 15	253 18	[illegible] 25	309 36	240 19
Psychometrika (NA)	- -	- -	- -	387 30	316 30	304 22	460 32	350 29	420 31	442 35	465 39	615 48	527 25	[illegible] 31	502 32
Public Opinion Quarterly (QA)	- -	- -	- -	764 57	744 48	542 37	868 59	464 40	715 46	697 50	700 56	709 49	724 57	672 60	655 50
Social Forces (QA)	633 95	870 99	617 75	623 69	604 65	490 65	481 61	399 58	385 46	440 43	637 56	636 58	528 46	670 47	529 45
Sociological Review (QA) (UK) (New series 1953-)	260 19	330 20	344 21	471 20	263 14	269 23	236 11	320 15	290 14	373 13	370 13	387 16	447 16	465 15	638 23
Sociometry (NA)	- -	- -	- -	426 15	410 27	561 62	390 25	715 31	427 32	417 34	515 37	465 33	419 31	504 34	643 34

Subject coding of journals using CLOSSS subject codes (see DISISS Working Paper no. 8, and DISISS Report B4): Anthropology (BA), Criminology (CA), Economics (DA), Geography (IA), Linguistics (KA), Political Science (MA), Psychology/Psychiatry (NA/NC/ND), and Sociology (QA).

TABLE 88

SUMMARY OF DATA ON AVERAGE NUMBER OF PAGES AND AVERAGE NUMBER OF ARTICLES FOR SELECTED SOCIAL SCIENCE JOURNALS 1935-1972

Subject		Period											
		1935	1940	1945	1950	1955	1960	1962	1964	1966	1968	1970	1972
Social sciences (20 journals)	Average length (total pages)	633	634	475	561	563	585	639	673	713	744	767	755
	Average no. of articles	41.4	42.4	41.9	43.6	45.0	50.8	57.4	55.8	55.5	57.3	60.7	61.0
UK Social science journals (8 journals)	Average length (total pages)	413	282	216	315	310	353	391	402	452	478	499	553
	Average no. of articles	33.1	20.4	18.5	21.6	23.5	24.9	29.0	24.6	27.9	29.5	29.0	29.5
US Social science journals (12 journals)	Average length (total pages)	789	870	648	726	731	740	804	854	887	921	946	889
	Average no. of articles	46.8	57.0	57.5	58.3	59.3	68.1	76.3	76.5	74.0	75.8	81.8	82.0
Sociology (5 journals)	Average length (total pages)	754	713	541	609	524	610	636	681	669	699	832	841
	Average no. of articles	50.4	46.8	51.4	52.2	46.4	46.4	46.5	51.0	46.0	44.2	48.2	54.0
Psychology (8 journals)	Average length (total pages)	601	684	516	581	637	631	730	745	778	771	762	655
	Average no. of articles	38.9	51.1	52.0	52.4	58.9	74.0	85.9	83.4	81.3	86.5	94.0	90.1
Ecomomics data after Fletcher (1972)		Period											
		1933	1938	1943	1948	1953	1958	1962	1966	1968	1969		
Economics (20 journals)	Average length (total pages)	549	580	495	434	536	578	655	686	964	775		
	Average no. of articles	31.4	31.2	31.4	23.7	28.8	34.4	38.0	42.6	51.7	54.0		

TABLE 89

NUMBER OF TEXT PAGES (excluding advertising matter) IN A SAMPLE OF JOURNALS, 1960 - 1973

Subject	Date	Type of journal Commercial	Society	All journals
Science		(22)	(18)	(40)
	1960	13475	11093	24550
	1965	20366	15255	35621
	1970	27944	15378	43322
	1973	28390	14069	42459
Social science		(6)	(5)	(11)
	1960	2060	1810	3870
	1965	2401	2124	4525
	1970	2330	2157	4487
	1973	2701	2248	4949
Humanities		(3)	(7)	(10)
	1960	1099	2716	3815
	1965	1107	2849	3956
	1970	1131	2855	3986
	1973	1193	2822	4014
All subjects		(31)	(30)	(61)
	1960	16616	15619	32235
	1965	23874	20228	44102
	1970	31405	20390	51795
	1973	32283	19139	51422

Subject	Percentage increase of 1973 pages over 1960 pages Type of journal Commercial	Society	All journals
Science	110.7 (22)	26.8 (18)	72.9 (40)
Social science	31.1 (6)	24.2 (5)	27.9 (11)
Humanities	8.6 (3)	3.9 (7)	5.2 (10)
All subjects	94.3 (31)	22.5 (30)	59.5 (61)

Figures in brackets represent number of journals sampled

Source: Wootton (1975) (unpublished)

TABLE 90

NUMBER OF ABSTRACTS OR INDEX ENTRIES RECORDED

IN SOCIAL SCIENCE SECONDARY SERVICES

Date	Service	International Bibliograph. of the Social Sciences				
	Sociological Abstracts (1952-)	Sociology (1951-)	Economics (1952-)	Political science (1953-)	Social and cultural anthropolog (1955-)	IPSA (1951-)
1951		n.a	-	-	-	1447
1952	n.a	n.a	7106	-	-	1340
1953	586	n.a	6053	n.a	-	1583
1954	337	n.a	5288	n.a	-	1826
1955	1020	n.a	n.a	n.a	n.a	1502
1956	952	4240	n.a	n.a	n.a	1414
1957	1016	4318	n.a	n.a	5146	1621
1958	1335	5161	8379	4017	4896	1475
1959	1669	4326	8259	4073	6198	1443
1960	1896	4518	7844	4250	5101	1461
1961	2331	4925	8139	n.a	3646	n.a
1962	2953	4402	7226	4318	2346	n.a
1963	3812	4711	7165	4168	4626	1355
1964	6063	5050	7187	4293	3708	1467
1965	4263	5251	7167	4156	4107	n.a
1966	5131	5263	7127	4358	4295	n.a
1967	5435	5548	7653	4596	4171	n.a
1968	5970	5745	8016	4498	3790	1450
1969	6020	5026	7224	3945	3679	1693
1970	5802	5501	7157	4032	3855	2206
1971	6681	6007	7925	4509	n.a	2244
1972	7195	4898	6968	4356	n.a	2998
1973	5537	n.a	n.a	n.a	n.a	4555

Date	Service						
	Hospital Abstracts (1961-)	Language Teaching Abstracts (1968-)	Economic Abstracts (1953-)	Research into Higher Education Abstracts (1966-)	ERIC Research in Education (1966-)	Current Index to Journals in Education (1969-)	International Abstracts of Operations Research (1961-)
1960	-	-	n.a	-	-	-	-
1961	n.a	-	n.a	-	-	-	597
1962	n.a	-	n.a	-	-	-	818
1963	n.a	-	n.a	[illegible]	-	-	816
1964	n.a	-	n.a	-	-	-	674
1965	n.a	-	n.a	-	-	-	903
1966	n.a	-	n.a	n.a	n.a	-	1034
1967	n.a	-	n.a	114	n.a	-	1098
1968	n.a	330	n.a	298	n.a	-	953
1969	n.a	359	2933[1]	351	n.a	n.a	877
1970	n.a	370	2827[2]	314	n.a	15890	1097
1971	1897	368	2647	346	12328	17670	1031
1972	1818	368	2734	297	13228	17478	904
1973	1815	293	n.a	224	14165	19511	1116

[1] 1969/1970

[2] 1970/1971, etc.

TABLE 91

NUMBERS OF ARTICLES PUBLISHED IN THREE SOCIOLOGY JOURNALS 1960-71

Year	Number of articles per year			
	AJS	ASR	SF	Total
1960	50	50	51	151
1961	42	55	44	141
1962	49	50	35	134
1963	42	49	46	137
1964	40	39	53	132
1965	36	41	55	132
1966	40	57	50	147
1967	43	57	50	150
1968	44	46	43	133
1969	45	46	41	132
1970	51	48	49	148
1971	48	51	50	149

Key: AJS - American Journal of Sociology; ASR - American Sociological Review; SF - Social Forces.

TABLE 92

ANALYSIS OF CONTENTS OF SOCIAL SCIENCE NEWS JOURNALS

(Percentages of total text pages)

	Accountants Weekly	Age Concern Today	Business Week	Community Care	The Economist	Health and Social Service Journal	Labour Research	Management Review and Digest	Municipal Journal	New Law Journal	Professional Administration	Race Today	SSRC Newsletter	Social Work Today	Taxes	Trade and Industry	Visual Education	Works Management	Mean percentage
Articles	26.0	41.5	7.0	46.0	11.5	25.0	53.0	25.5	23.0	31.0	34.5	48.0	56.5	20.0		8.5	8.0	64.0	29.4
News and notes	23.0	42.0	15.0	16.0	24.5	7.5	15.5	37.0	8.0	17.0	9.5	19.0	12.5	6.5	60.0	205.0	64.0	23.0	23.4
Letters	2.0	3.5	2.5	-	2.5	1.5	-	2.5	2.0	4.0	1.5	19.0	-	4.5	5.0	-	-	1.5	2.8
Meetings and conferences	-	-	-	-	-	-	12.5	3.5	-	-	-	-	-	-	5.0	-	-	2.5	1.3
Forthcoming events	1.0	-	-	2.0	-	-	6.0	-	1.0	-	3.0	-	-	1.5	1.5	1.5	-	-	1.0
Directory information	-	-	-	-	2.0	-	6.0	-	3.0	14.0	1.5	-	20.0	1.0	-	66.0	10.0	-	6.9
Book reviews	-	2.0	2.0	8.0	5.0	-	6.0	7.0	1.0	-	3.0	9.0	5.0	4.5	3.5	-	18.0	2.5	4.2
Bibliographical	-	-	-	-	-	-	-	21.0	-	-	-	-	5.0	-	-	-	-	-	1.5
Situations vacant	44.0	-	-	24.0	9.0	58.5	-	3.5	48.0	23.0	15.0	-	-	62.0	5.0	-	-	-	16.2
Other advertisements	4.0	11.0	73.5	4.0	45.5	7.5	-	-	14.0	11.0	32.0	5.0	-	-	20.0	3.5	-	6.5	13.2
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

TABLE 93

CHARACTERISTICS OF THE REVIEW LITERATURE OF NINE FIELDS OF SCIENCE (After Fix et. al., 1964)

Sample and characteristics	Subject field			
	Astronomy	Biology	Chemistry	Earth Science
Source	(i) Met. & Geophys. Abstracts (MGA) (ii) Physics Abs.	Biological Abstracts (BASIC - papers are all tagged 'review')	Bibliog. of Reviews in Chemistry (Previous years revs in Chemical Abs.)	(i) Met. & Geophys. Abs. (1963) (ii) Geophys. Abs. (GA) (1962) (iii) Geosciences Abs. (GSA) (1962)
Period and sample	(i) MGA $^{3}/12$ (1963) issues, and a 10% sample from Astronomy related headings. (ii) PA Whole year (1962)	1963 Whole year	1963 $\overline{5}$ (1962 Chem. Abs.)	(i) MGA. 10% sample of select Headings. (ii) Random 10% (iii) 10% from $^{4}/12$
Number and % of reviews in sample	(i) MGA 160 (=2% of all abtracts) (ii) PA = 50	846 in (1963) 10% sample taken	8601 Random sample (n unspecified)	(i) 270(3% of all items) (ii) 430 (17%) (iii) 680 (15%) = 1380 in 1962
Lag in entry for sample year/period (Base = 1964)	(i) 1962 35 (22%) 1961 70 (44%) 1960 18 (11%) (ii) 1962 20 (40%) 1961 20 (40%) 1960 9 (16%)	1963 252 30% 1962 477 56% 1961 45 5% 1960 18 2% 1959 9 1% 1958 5 1% Estimate from 10% sample.	1962 4460 52% 1961 2860 33% 1960 980 11% 1959 270 3%	1962 574 41% 1961 644 46% 1960 98 7% 1959 56 4%
Estimated no. reviews	240 (1962) (In sample)	In Biology > 1,000 p.a	8700 (1962) (Chem. Abs. incl. monographs etc.)	1400 (1962)
Growth estimate	n.d	n.d	1 2 3 1958 95736 5553 5.8% 1959 98677 6344 6.4% 1960 104484 6370 6.1% 1961 118337 6799 5.7% 1962 140271 8601 6.1% Increase in period 47% 59%	n.d
Foreign vs. domestic coverage	26% US (60) 74% non-US (180)	38% non-US 62% US	36% US Rsch. arts. only 64% Foreign	56% non-US 41% US
Language	57% English 45% non-English	20% non-English 80% English	n.d	65% English 30% non-English
Publication source	72% prim. jnls (173) 4% in rev. publ. (10) 22% in annuals or other (53)	71% prim. jnls. 7% rev. publ. 21% annuals or others	55% prim. jnls 38% rev. publ. 7% annuals or others	76% prim. jnls 4% rev. publ. 15% annuals or others
Average length of reviews	15pp or 11pp if one of 212pp is eliminated	24pp	19pp	55pp or 18pp with biases removed
Regular sources	6 regular sources	43 publ in USA (in Biol.) 43 in Biomed.	27 publ. in USA	5 in USA
General	Small field. Not many reviews req'd. Astron. Jahresberichte is best source, but has 2 yr. lag.		45% are applied 55% are resch ortd. BRC ceased publ.?	

1 No. arts. in Chem. Abs.
2 No. reviews
3 % reviews

TABLE 53 (Contd.)

CHARACTERISTICS OF THE REVIEW LITERATURE OF NINE FIELDS OF SCIENCE (After Fix et. al., 1964)

Sample and characteristics	Subject field				
	Engineering	Mathematics	Medicine	Meteorology	Physics
Source	Engineering Index	Mathematical Reviews	Bibliography of Medical Reviews. (Preceeding years reviews in Index Medicus)	Met. & Geophys. Abstracts	Physics Abstracts
Period and sample	10% sample of $^1/_{12}$ issues		8 1963. 4% random sample, for analysis	$^3/_{12}$ issues (1963)	1962. Subject index term 'reviews'; then, 30% sample of cited reviews
Number and % of reviews in sample	7500 (based on 10% sample) (18% of all items)		4% sample 6,633 in 1963	1600 (18% of all items)	300 (1.2% of all items) (On sample)
Lag in entry for sample year/period (Base = 1964)	1962 4200 56% 1961 2850 38% 1960 300 4%		1962 2900 44% 1961 3250 49% 1960 300 5% (From 4% sample)	1963 16 1% 1962 768 48% 1961 384 24% 1960 192 12% 1959 80 5%	1962 142 47% 1961 106 35% 1960 42 14%
Estimated no. reviews	c. 7500 (1962		c. 6600	1500 (1962)	400 (1962) (estimated)
Growth estimate	n.d		1 2 3 1955 111159 1075 0.9 1956 106623 2000 1.8 1957 104588 2885 2.7 1958 114214 3241 2.8 1959 107042 2382 2.2 1960 125000 3300 2.7 1961 140000 4800 3.4 1962 146000 6633 4.5 3900 reviews relate to pre-clinical subs.	1960 - 1963 91% incr. in coverage of Abs.	1 2 3 1959 14016 1960 21407 1961 21167 167 0.8% 1962 24236 302 1.2%
Foreign vs. domestic coverage	44% non-US 56% US		71% non-US 29% US	60% non-US 37% US	58% non-US 42% US
Language	20% non-English 80% English		59% non-English 41% English	31% non-English 68% English	From sample est'd 29% non-English 69% English
Publication source	95% prim. jnls 5% in others			52% prim. jnls (780) 36% Annuals (540)	47% prim. jnls 47% rev. publ 6% annual/others
Average length of reviews	9pp		18pp	99pp, reduced to 31pp (20→287pp)	22pp reduced to 16pp (2→252pp)
Regular sources	16 regular sources		22 reg. sources in USA. BMR publ. abt. 3 months after each qtr. of Index Med.	1 source in USA	22 regular sources in USA
General	No special designation of reviews in Ei	Very little rev. lists. Identified (i) Nat. of sub. (ii) Revs. not feasible (iii) Books/monogs. input subst. (iv) More reviews publ. in USSR.	Index Medicus only covers serial lit. 42% clinical 56% pre-clinical 1 No. arts. in Ind. Medicus 2 No. reviews 3 % reviews	Reviews not specially designated	Grouping of reviews in index 1961- 1 No. abs. in PA 2 No. reviews 3 % reviews

TABLE 94

ESTIMATES OF QUANTITY OF REVIEW LITERATURE PRODUCED

Source of review literature	Sample examined	Number of reviews identified
A SCIENTIFIC AND TECHNICAL		
Review serials	Various bibliographies, LC and UK MARC tapes (Annuals, Yearbooks, etc)	3,675 reviews in 309 serials. Assuming this to be an 80% sample, about 4,500 reviews in all published in 1972.
Primary journals	ISI Source Index	Higher incidence in applied fields (Friedman, 1963; Virgo, 1971). About 1.1% of good quality reviews originate in primary journals. By extrapolation, and depending on no. of references cut-off between 4,000 and 11,300.
Conference proceedings	Sample of 109 conferences in 1972 issue of Index to Conferences reviewed by the NLL	Depending on criteria chosen, and extrapolating between 2,200 and 9,500 reviews produced in 1972; 4,000 in 1972 a good approximation.
Books	BNB MARC tapes classes 500 and 600 inclusive	About 2,000 reviews estimated in 1972.
Reports	USGA, STAR, NSA, R&D Abstracts for Spring 1972	About 450 reviews estimated in 1972.
Secondary services	Based on secondary services providing reviews	Less than 200 reviews estimated in 1972
B SOCIAL SCIENCES[1]		
Primary journals in social sciences identified on CLOSSS	Examination of social science journals at Bath University Library for reviews and the number of social sciences serials on CLOSSS containing reviews.	Estimated 1,200 in 1970 on basis of CLOSSS. Extrapolating to whole serial population unlikely to be more than 2,500 reviews broadly defined

Source: Woodward (1974) and DISISS[1]

TABLE 95

PRODUCTION OF OFFICIAL PUBLICATIONS IN THE UK

(After Marshallsay, 1972)

1. Scale of world production

Accessions[1] to State Paper Room, British Museum Library (now British Library, Official Publications Library).

1966	916507
1967	877289
1968	750636
1969	687272
1970	688872

[1] Includes UK foreign and international official publications and documents. Fluctuations due to different rates of processing at BML.

2. Other indicators

	Type	Production at 1969
(a)	HMSO Parliamentary and non-Parliamentary (Monographs and serials)	5342
(b)	International organizations	
	(i) HMSO Catalogue	1935
	(ii) Received at BLPES[1]	6070
(c)	UK Government departments; Nationalised industries; Overseas governments, etc.	At least 68,000 identified at BML, but actual number produced probably much greater.

[1] British Library of Political and Economic Science

General note

Marshallsay (1972) concluded that it was very difficult to gather accurate information on either the size, growth or characteristics of official publications and documents. However, these figures reproduced from her report give some idea of the scale of official publications.

TABLE 95

COUNTRIES RANKED BY BOOK PRODUCTION

Country (1969 rank order for book production)	Book production (1969) N	Rank	Number of book titles produced per million population N	Rank
USSR	74611	1	310	23
Federal Germany	3345[illegible]	2	570	12
UK	3232[illegible]	3	[illegible]52	11
Japan	3100	4	303	24
USA	29250	5	144	32
France	21938	6	436	17
Spain	20031	7	608	9
India	13733	8	26	44
Netherlands	11204	9	870	6
Poland	9413	10	289	25
Yugoslavia	8708	11	428	18
Italy	8450	12	15[illegible]	30
Czechoslovakia	8210	13	569	13
Switzerland	7505	14	1206	2
Rumania	7440	15	372	20
Sweden	7404	16	928	5
Finland	5876	17	1249	1
Portugal	5669	18	593	10
Turkey	5340	19	155	31
DDR	5169	20	323	21
Austria	5104	21	692	8
Belgium	5089	22	528	14
Denmark	4978	23	1018	4
Hungary	4831	24	469	15
Brazil	4812	25	53	41
Argentina	4395	26	183	28
Australia	3939	27	320	22
Norway	3935	28	1022	3
Canada	3659	29	174	29
Taiwan	3616	30	262	26
Bulgaria	3548	31	421	19
Pakistan	3312	32	30	43
Mexico	2966	33	61	39
S. Korea (Rep)	2501	34	80	36
Thailand	2457	35	73	37
South Africa	2190	36	112	35
Israel	2038	37	722	7
Burma	1926	38	71	38
UAR	1782	39	58	40
Greece	1822	40	206	27
Sri Lanka	1586	41	130	33
Iran	1341	42	48	42
New Zealand	1275	43	459	14
Chile	1100	44	115	34
Nigeria	1099	45	17	45

TABLE 97

BOOK TITLE PRODUCTION PER CAPITA FOR SELECTED COUNTRIES

Country	Population (000s)		Titles published in 1970	Titles per head X1m	Rank (n=12)
USSR	(1971)	243896	78899	324	7
USA	(1970)	207976	35415	171	10
Germany (FR)	(1971)	61503	45369	737	2
UK	(1971)	55347	33441	606	3
Japan	(1970)	103720	31249	290	9
France	(1970)	50770	22935	452	5
Spain	(1970)	34033	19717	579	4
India	(1971)	543368	14145	26	12
Netherlands	(1971)	13259	11159	842	1
Poland	(1970)	32589	10038	308	8
Yugoslavia	(1971)	21500	8119	377	6
Italy	(1970)	54683	8615	157	11
Israel	(1971)	3034	2072	679	-
Iceland	(1971)	207	674	3256	-

TABLE [illegible]

INDICES OF BOOK PRODUCTION, POPULATION AND GROSS NATIONAL PRODUCT (GNP)

Country (1969 rank order for book production)	Book production 1969 [illegible] world book prod. [illegible] countries N	Rank	Rank	Population (1969) [illegible] for top [illegible] book producers [illegible] 1000's	Rank	Rank	Gross Domestic Product (GDP) Millions US $	Rank for top [illegible] book producers	Number of book titles produced per million population N	Rank	GDP in millions US $ per million population N	Rank	Number of book titles per million US $ of GDP N	Rank
USSR	74611	1		240571	2	–	n.d	–	310	23	–	–	–	–
Fed. Germany	33451	2	1	58707	8	6	132741	3	570	12	2301	9	0,219	26
UK	32321	3	2	55534	9	7	108331	5	582	11	1951	15	0,298	18
Japan	31000	4	3	102321	5	4	166860	2	303	24	1631	17	0,186	28
USA	29250	5	4	203213	3	2	929 [illegible]	1	144	32	4571	1	0,315	16
France	21958	6	5	50320	11	9	139914	4	436	17	2781	7	0,157	31
Spain	20031	7	6	32949	15	13	28893	12	608	9	877	22	0,693	5
India	13733	8	7	536984	1	1	50580[1]	8	26	44	94	35	0,270	19
Netherlands	11204	9	8	12873	29	14	27352	14	870	6	2148	12	0,405	9
Poland	9413	10		32555	16	–	n.d		289	25	–	–	–	–
Yugoslavia	8708	11		20351	23	–	n.d		428	18	–	–	–	–
Italy	8191	12	9	53170	10	8	81476	6	159	30	1532	19	0,100	36
Czechoslovakia	8210	13		14418	27	–	n.d		569	13	–	–	–	–
Switzerland	7505	14	10	6221	40	32	18867	17	1216	2	2902	5	0,416	8
Rumania	7[illegible]	15		20010	24	–	n.d		372	20	–	–	–	–
Sweden	7[illegible]	16	11	7978	38	30	28254	11	928	5	3544	2	0,262	21
Finland	5876	17	12	4703	42	34	9226	25	1245	1	1960	13	0,637	6
Portugal	5687	18	13	9560	35	28	5700	31	593	10	596	24	0,994	2
Turkey	5340	19	14	34375	14	12	11164	19	155	31	412	26	0,377	13
[illegible]	5160	20		15994	26	–	n.d		323	21	–	–	–	–
Austria	5101	21	15	7373	39	31	12781	22	692	8	1733	16	0,397	11
Belgium	5080	22	16	9646	33	26	22729	15	528	14	2356	11	0,231	24
Denmark	4978	23	17	4891	41	33	13756	21	1018	4	2813	6	0,358	15
Hungary	4831	24	18	10295	32	25	30175[3]	10	469	15	2931	4	0,160	30
Brazil	4812	25		90840	6	–	n.d		53	41	–	–	–	–
Argentina	4395	26	19	23983	21	19	22513	16	183	28	943	20	0,194	27
Australia	3939	27	20	12296	30	23	33301	9	320	22	2708	8	0,118	34
Norway	3935	28	21	3851	43	35	8738	24	1022	3	2336	10	0,430	10
Canada	3639	29	22	21089	22	20	73213	7	171	29	3473	3	0,050	37
Taiwan	3616	30	23	13800	28	22	4775	33	262	26	346	28	0,757	4
Bulgaria	3548	31		8434	37	–	n.d		421	19	–	–	–	–
Pakistan	3312	32	24	111830	4	3	13815[2]	20	30	43	124	34	0,239	22
Mexico	2966	33	25	48933	12	10	27780[3]	13	61	39	568	25	0,107	35
S. Korea (Rep)	2501	34		31139	18	16	6896	27	80	36	221	29	0,359	14
Thailand	2457	35	26	34738	13	11	6369	28	73	37	183	31	0,386	12
S. Africa	2190	36	27	19618	25	21	15881	18	112	35	810	23	0,138	32
Israel	2038	37	28	2822	44	36	4592	34	722	7	1627	18	0,444	7
Burma	1926	38	29	26980	20	18	1803[2]	37	71	38	67	36	1,068	1
UAR	1872	39	30	32501	17	15	6180[3]	29	58	40	190	30	0,303	17
Greece	1822	40	31	8835	36	29	8241	26	206	27	933	21	0,221	25
Ceylon	1586	41	32	12240	31	24	1977	36	130	33	162	32	0,802	3
Iran	1341	42	33	27892	19	17	10198	23	48	42	366	27	0,131	33
New Zealand	1275	43	34	2777	45	37	5438	32	459	16	1958	14	0,234	23
Chile	1100	44	35	9566	34	27	6010	30	115	34	129	33	0,183	29
Nigeria	1099	45	36	64560	7	5	4129[2]	35	17	45	64	37	0,266	20

Note: 1 = 1965 2 = 1967 3 = 1968

TABLE [illegible]

COMPARISON OF RANKINGS BY COUNTRY ON INDICES OF BOOK PRODUCTION, POPULATION AND GROSS DOMESTIC PRODUCT

Book production: top 45 countries in 1969		Population of top 45 book producers in 1969		GDP for 37 of the top 45 book producers in 1969		Number of book titles per million population for top 45 book producers in 1969		GDP (in millions US $) per million population for 37 of the top 45 book producers in 1969		Number of book titles per million US $ of GDP for 37 of top 45 book producers in 1969	
1	USSR	1	India	1	USA	1	Finland	1	USA	1	Burma
2	Federal Germany	2	USSR	2	Japan	2	Switzerland	2	Sweden	2	Portugal
3	UK	3	USA	3	Fed. Germany	3	Norway	3	Canada	3	Sri Lanka
4	Japan	4	Pakistan	4	France	4	Denmark	4	Hungary	4	Taiwan
5	USA	5	Japan	5	UK	5	Sweden	5	Switzerland	5	Spain
6	France	6	Brazil	6	Italy	6	Netherlands	6	Denmark	6	Finland
7	Spain	7	Nigeria	7	Canada	7	Israel	7	France	7	Israel
8	India	8	Fed. Germany	8	India	8	Austria	8	Australia	8	Switzerland
9	Netherlands	9	UK	9	Australia	9	Spain	9	Federal Germany	9	Netherlands
10	Brazil	10	Italy	10	Hungary	10	Portugal	10	Norway	10	Norway
11	Yugoslavia	11	France	11	Sweden	11	UK	11	Belgium	11	Austria
12	Italy	12	Mexico	12	Spain	12	Fed. Germany	12	Netherlands	12	Thailand
13	Czechoslovakia	13	Thailand	13	Mexico	13	Czechoslovakia	13	Finland	13	Turkey
14	Switzerland	14	Turkey	14	Netherlands	14	Belgium	14	New Zealand	14	South Korea
15	Rumania	15	Spain	15	Belgium	15	Hungary	15	UK	15	Denmark
16	Sweden	16	Poland	16	Argentina	16	New Zealand	16	Austria	16	USA
17	Finland	17	UAR	17	Switzerland	17	France	17	Japan	17	UAR
18	Poland	18	South Korea	18	South Africa	18	Yugoslavia	18	Israel	18	UK
19	Turkey	19	Iran	19	Turkey	19	Bulgaria	19	Italy	19	India
20	GDR	20	Burma	20	Pakistan	20	Rumania	20	Argentina	20	Nigeria
21	Austria	21	Argentina	21	Denmark	21	GDR	21	Greece	21	Sweden
22	Belgium	22	Canada	22	Austria	22	Australia	22	Spain	22	Pakistan
23	Denmark	23	Yugoslavia	23	Iran	23	USSR	23	South Africa	23	New Zealand
24	Hungary	24	Romania	24	Norway	24	Japan	24	Portugal	24	Belgium
25	Taiwan	25	South Africa	25	Finland	25	Poland	25	Mexico	25	Greece
26	Argentina	26	GDR	26	Greece	26	Taiwan	26	Turkey	26	Federal Germany
27	Australia	27	Czechoslovakia	27	South Korea	27	Greece	27	Iran	27	Argentina
28	Norway	28	Taiwan	28	Thailand	28	Argentina	28	Taiwan	28	Japan
29	Canada	29	Netherlands	29	UAR	29	Canada	29	South Korea	29	Chile
30	Portugal	30	Australia	30	Chile	30	Italy	30	UAR	30	Hungary
31	Bulgaria	31	Sri Lanka	31	Portugal	31	Turkey	31	Thailand	21	France
32	Pakistan	32	Hungary	32	New Zealand	32	USA	32	Sri Lanka	32	South Africa
33	Mexico	33	Belgium	33	Taiwan	33	Sri Lanka	33	Pakistan	33	Iran
34	South Korea	34	Chile	34	Israel	34	Chile	34	Chile	34	Australia
35	Thailand	35	Portugal	35	Nigeria	35	South Africa	35	India	35	Mexico
36	South Africa	36	Greece	36	Sri Lanka	36	South Korea	36	Burma	36	Italy
37	Israel	37	Bulgaria	37	Burma	37	Thailand	37	Nigeria	37	Canada
38	Burma	38	Sweden			38	Burma				
39	UAR	39	Austria			39	Mexico				
40	Greece	40	Switzerland			40	UAR				
41	Sri Lanka	41	Denmark			41	Brazil				
42	Iran	42	Finland			42	Iran				
43	New Zealand	43	Norway			43	Pakistan				
44	Chile	44	Israel			44	India				
45	Nigeria	45	New Zealand			45	Nigeria				

TABLE 100

BOOK AND SERIAL PRODUCTION, POPULATION, AND GROSS NATIONAL PRODUCT (GNP)
OF THE UK AND USA (Index numbers)

Date	UNITED KINGDOM						£ mln		UNITED STATES OF AMERICA						$ mln	
	Book titles product	Index 1951 = 100	Serial titles product	Index 1951 = 100	Popul (000's)	Index 1951 = 100	GNP at market prices	Index 1951 = 100	Book titles product	Index 1951 = 100	Serial titles product	Index 1951 = 100	Popul (000's)	Index 1951 = 100	GNP at market prices	Index 1951 = 100
1950	12929	-	607	-	50565	-	13328	-	10734	-	477	-	151868	-	288300	-
1951	15643	100	618	100	50225	100	14727	100	11300	100	491	100	153982	100	331218	100
1952	16674	106.6	627	101.5	50444	100.4	15860	107.7	11800	104.4	505	102.9	156393	101.6	349537	105.5
1953	15691	100.3	641	103.7	50611	100.8	16940	115.1	12100	107.1	513	104.5	158956	103.2	367188	110.9
1954	16910	108.1	657	106.3	50784	101.1	17927	121.7	11901	105.3	517	105.3	161884	105.1	364772	110.1
1955	16995	108.6	676	109.4	50968	101.5	19163	130.1	12600	111.5	535	109.0	165069	107.2	398935	120.4
1956	17579	112.4	676	109.4	51208	102.0	20836	141.5	12538	111.0	548	111.6	168088	109.2	420296	126.9
1957	18973	121.3	688	111.3	51456	102.5	21944	149.0	13142	116.3	565	115.1	171187	111.2	444009	134.1
1958	19490	124.6	700	113.3	51680	102.9	22927	155.7	13441	119.0	575	117.1	174149	113.1	446287	134.8
1959	17674	113.0	718	116.2	51985	103.5	23957	162.7	14700	130.1	597	121.6	177135	115.1	484194	145.3
1960	21672	138.6	735	118.9	52383	104.3	25313	171.9	15012	132.9	615	125.3	179992	116.9	504404	152.3
1961	22505	143.9	753	121.8	52807	105.2	26738	181.6	18060	159.8	637	129.8	183057	118.9	520054	157.0
1962	19523	124.8	766	123.9	53314	106.2	28519[1]	193.7	21904	193.8	658	134.0	185890	120.7	535900[1]	170.9
1963	19566	125.1	801	129.6	53636	106.8	30505[1]	207.1	25784	228.2	673	137.1	188658	122.5	599700	181.1
1964	23007	147.1	826	133.7	54009	107.5	32873[1]	223.2	27917	247.1	698	142.2	191372	124.3	638900[1]	192.9
1965	23346	149.2	860	139.2	51461	108.2	35351[1]	240.0	28595	253.1	723	147.3	195530	127.0	692300	209.1
1966	24666	157.7	900	145.6	54654	108.8	37667[1]	255.8	30050	265.9	759	154.6	196920	127.9	758600[1]	229.1
1967	26505	169.4	952	154.1	54978	109.5	39658[1]	269.3	28762	254.5	793	161.5	199118	129.3	803600[1]	242.6
1968	26143	167.1	986	159.6	55282	110.1	42556[1]	289.0	30387	268.9	815	166.0	201520	130.9	875300[1]	264.3
1969	29314	187.4	1029	166.5	55534	110.6	45174[1]	306.7	29173	258.2	838	170.7	203216	132.0	943500[1]	284.9

[1] Note: GDP not GNP data used

Supplementary

Tables

TABLE 17

BOOK PRODUCTION OF THE TOP 45 PRODUCERS (1969): ANNUAL PERCENTAGE CHANGE IN SIZE

Year	Annual percentage change classes 0-9	Number of extra titles per year	Annual percentage change (excluding class 8)	Number of extra titles per year	Annual percentage change class 8	Number of extra titles per year
1960	-	-	-	-	-	-
1961	0.3	1027	- 0.2	- 525	2.1	1552
1962	5.0	15755	5.6	13191	3.4	2564
1963	10.0	32725	11.3	28220	6.1	4805
1964	0.3	1017	1.7	4659	- 4.7	-3942
1965	10.5	37970	13.4	37660	0.4	310
1966	- 2.1	-8298	- 5.1	-16170	9.9	7872
1967	3.4	13117	4.9	15007	- 2.2	-1890
1968	5.2	20824	7.3	23376	- 3.0	-2552
1969	5.9	25097	6.4	21902	3.9	3195
1970	7.2	32352	7.0	25518	7.9	6834

Source: DISISS Working Paper no. 7, Table 2.

TABLE 86

UNITED KINGDOM BOOK PRODUCTION:

SUMMARY OF GROWTH DATA

Sample	Time period	Linear regression coefficient Intercept (∝)	 Slope (β)	Overall percentage change in annual production	Size in 1970	Projected size in: 1975	 1980	 1985
UNESCO								
All titles	1950-70	15.109	0.798	96.0	33400	35400	40500	44600
	1960-70	-	-	41.0	-	-	-	-
'Functional'	1960-70	14.284	0.903	58.0	24400	28600	33000	37400
BNB								
All titles	1950-70	12.782	0.722	136.0	30500	31900	35400	38900
	1960-70	-	-	41.0	-	-	-	-
'Functional'	1950-70	9.344	0.606	148.0	23900	25000	28000	31000
	1960-70	-	-	46.0	-	-	-	-
Excl. Fiction	1950-70	10.315	0.659	151.0	26300	27000	30000	33000
		Exponent (∝)	 (β)					
UNESCO								
All titles	1950-70	16.25	1.034	95.0	33400	38600	45600	54000
'Functional'	1960-70	14.80	1.047	58.0	24400	30900	38900	48900
BNB								
All titles	1950-70	13.[illegible]4	1.035	136.0	30500	35000	41600	47800
'Functional'	1950-70	10.27	1.039	148.0	23900	27700	33600	40700
Excl. Fiction	1950-70	11.30	1.039	151.0	26300	30300	36700	44400

Sources: DISISS Working Paper no. 7, Tables 83 and 85.

TABLE 94

UNITED KINGDOM BOOK PRODUCTION: SUMMARY OF GROWTH DATA.

Sample	Time period	Linear regression coefficient Intercept (α)	Slope (β)	Overall percentage change in annual production. 1950-70	1960-70[1]	Size in 1970	Projected size in: 1975	1980	1985
Humanities	1950-70	3.723	0.165	98.0	32.0	7600	7800	8600	9400
Social sciences	1950-70	3.361	0.288	209.0	64.0	10900	11000	12500	14000
Pure sciences	1950-70	0.460	0.109	318.0	70.0	2900	3600	4300	5000
Applied sciences	1950-70	2.572	0.074	91.0	18.0	4300	4500	4800	5100
All books (BNB)	1950-70	12.782	0.722	136.0	41.0	30500	31900	35400	38900
All books (UNESCO)	1950-70	15.109	0.798	95.0	41.0	33400	36400	40500	44600
ABPR-Compatible data (Table 113)					1954-70[1]				
Humanities	1954-70	4.153	0.172	-	62.0	7400	8100	8900	9700
Social sciences	1954-70	4.280	0.321	-	111.0	11000	11200	12700	14200
Pure sciences	1954-70	0.824	0.121	-	229.0	2900	3400	4000	4600
Applied sciences	1954-70	2.748	0.080	-	46.0	4300	4400	4800	5200

Source: Table 91 and Table 113[1] (to allow comparison with Table 109)

Sample	Time period	Exponent Intercept (α)	Slope (β)	Overall percentage change in annual production	Size in 1970	Projected size in: 1975	1980	1985
Social sciences (Table 88)	1950-70	3.896	1.044	209.0	10900	11600	14400	17800
Humanities	1950-70	3.915	1.030	98.0	7600	8400	9800	11400
Pure sciences	1950-70	0.696	1.074	318.0	2900	4400	6300	8300

Source: DISISS Working Paper no. 7, Table 91

TABLE 99

UNITED KINGDOM SOCIAL SCIENCE BOOK PRODUCTION: SUMMARY OF GROWTH DATA.

Sample/Class	Time period	Linear regression coefficient (∝)	(β)	Overall percentage change in annual production	Size of literature in 1970	Projected size in: 1975	1980	1985
Social sciences (Table 91)	1950-1970	33.61	2.880	209.0	10900	11000	12500	14000
Social sciences (Table 96)	1950-1970	25.27	2.651	239.0	9390	8900	10100	11300
Sociology	1950-1970	- 0.265	15.470	858.0	430	400	470	540
Political science	1950-1970	175.7	18.117	193.0	660	650	740	830
Economics	1950-1970	410.8	60.414	304.0	1990	1970	2270	2570
Education	1950-1970	395.6	17.657	311.0	1180	870	970	1070
		Exponents (∝)	(β)					
Social sciences (Table 96)	1950-1970	3.059	1.049	209.0	9390	10600	13500	17200
Social sciences (Table 91)	1950-1970	3.896	1.044	239.0	10960	11600	14400	17800
Sociology	1950-1970	48.97	1.103	858.0	430	600	980	1610
Political science	1950-1970	219.7	1.046	193.0	660	675	845	1060
Economics	1950-1970	546.8	1.057	304.0	1990	2300	3040	4010
Education	1950-1970	292.5	1.059	311.0	1180	1320	1750	2340

Sources: DISISS Working Paper no. 7, Tables 91, 96 and 97.

TABLE 102

UNITED STATES OF AMERICA BOOK PRODUCTION: SUMMARY OF GROWTH DATA

Sample	Time period	Linear regression coefficient		Overall percentage change in annual production	Size of literature in 1970	Projected size in:		
		Intercept (α)	Slope (β)			1975	1980	1985
All titles (ABPR)	1954-1971	7.3902	1.606	217.0	37700	42700	50700	58700
	1960-1970	-	-	140.0	-	-	-	-
All titles (UNESCO)	1960-1970	17.813	1.269	136.0	35400	38500	45000	51500
'Functional' titles (UNESCO)	1960-1970	11.174	1.248	182.0	27200	31000	37000	43000
		Exponent (α)	(β)					
All titles (ABPR)	1954-1971	10.240	1.078	217.0	37700	53600	78000	113000
All titles (UNESCO)	1960-1970	17.890	1.055	136.0	35400	42300	55300	74300

Sources: **DISISS** Working Paper no. 7, Tables 101 and 102

TABLE 109

UNITED STATES OF AMERICA BOOK PRODUCTION: SUMMARY OF GROWTH DATA

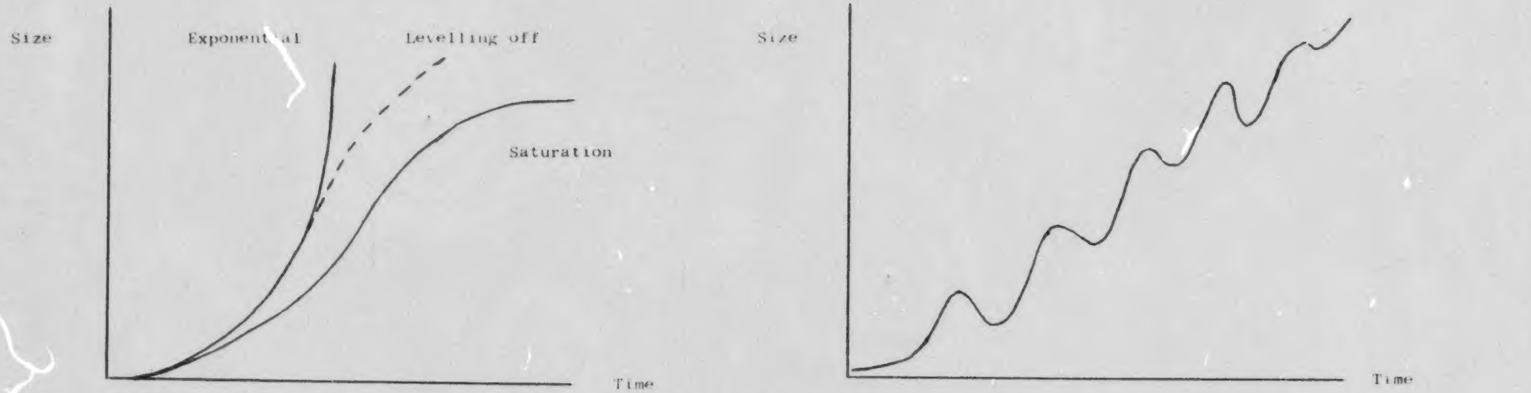
Sample/class	Time period	Linear regression coefficient Intercept (α)	Slope (β)	Overall percentage change in annual production 1954-71	1960-70	Size in 1970	Projected size in: 1975	1980	1985
All titles (ABPR)	1954-1971	7.390	1.606	217.0	140.0	37700	42700	50700	58700
Humanities	1954-1971	2.041	0.485	226.0	150.0	11400	12500	14800	17100
Social sciences	1954-1971	0.364	0.648	432.0	271.0	13200	14500	17600	20700
Pure sciences	1954-1971	0.460	0.139	280.0	116.0	2700	3400	4100	4800
Applied sciences	1954-1971	0.872	0.153	185.0	104.0	3800	4300	5000	5700
		Exponent (α)	(β)						
All titles (ABPR)	1954-1971	10.240	1.078	217.0	140.0	37700	53600	78000	113000
Humanities	1954-1971	2.997	1.078	226.0	150.0	11400	15700	22700	33100
Social sciences	1954-1971	2.086	1.111	432.0	271.0	13200	21000	35600	60300

Source: DISISS Working Paper no. 7, Table 106

Figures

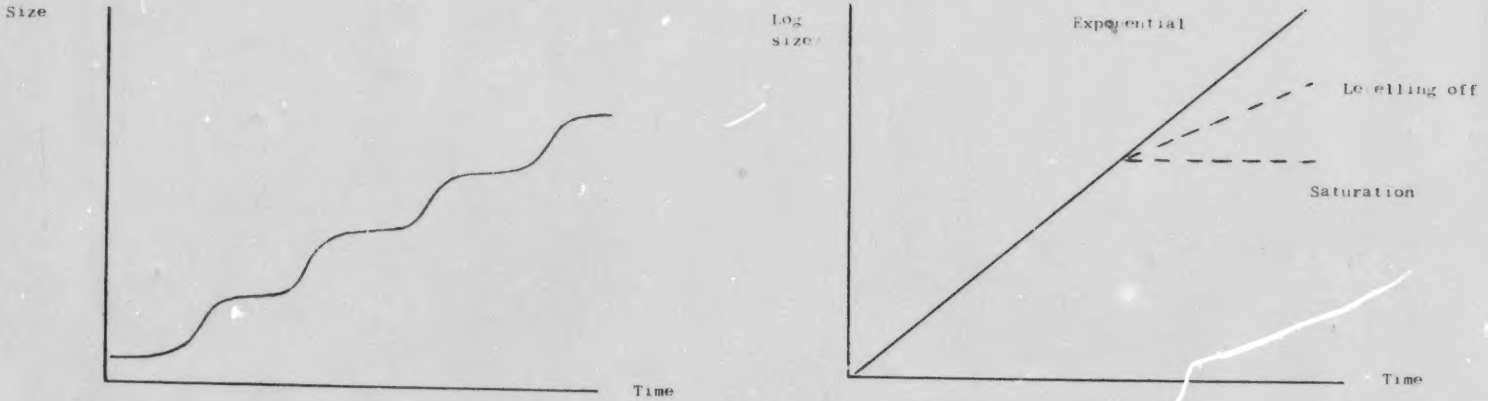
Figure 1

Different types of growth curve



(a) Non-linear trends ; each curve shows a period of accelerating growth

(c) Convergent oscillation



(b) Escalation

(d) Situation in curve (a) plotted log size against time

Figure 2

Growth curves for social science serials by subject

Key to graphs

1 Time analysis for all serials
2 Time analysis for serials in Social sciences
3 Time analysis for serials in Anthropology
4 Time analysis for serials in Criminology
5 Time analysis for serials in Economics
6 Time analysis for serials in Education
7 Time analysis for serials in Environmental planning
8 Time analysis for serials in Geography
9 Time analysis for serials in History
10 Time analysis for serials in Linguistics
11 Time analysis for serials in Management
12 Time analysis for serials in Political science
13 Time analysis for serials in Psychology
14 Time analysis for serials in Social policy
15 Time analysis for serials in Sociology
16 Time analysis for serials in Statistics
17 Time analysis for serials in Law
18 Time analysis for serials in Library science

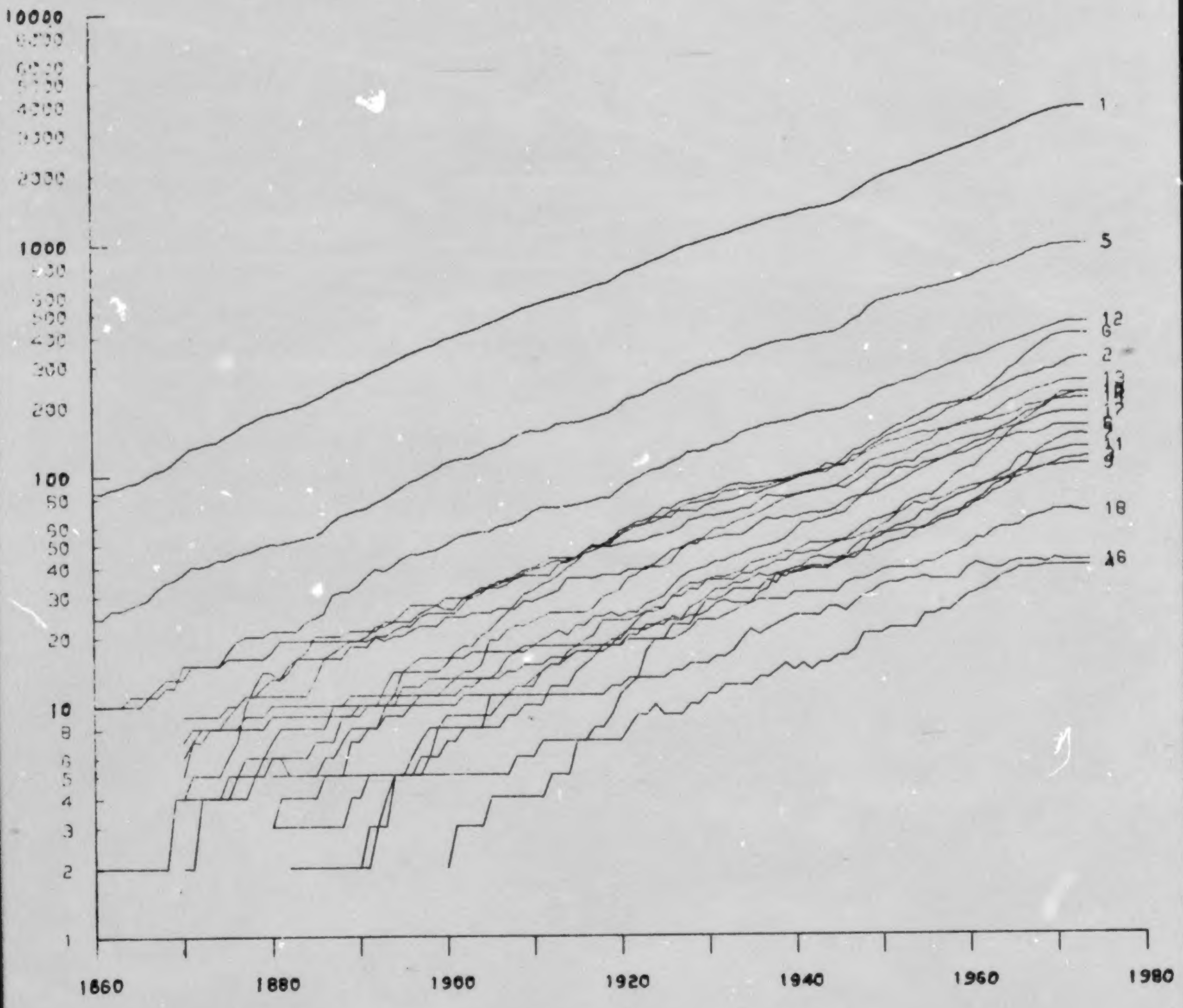


Figure 2(a)

All serials (1) to (18), 1860-1970
Source: CLOSSS

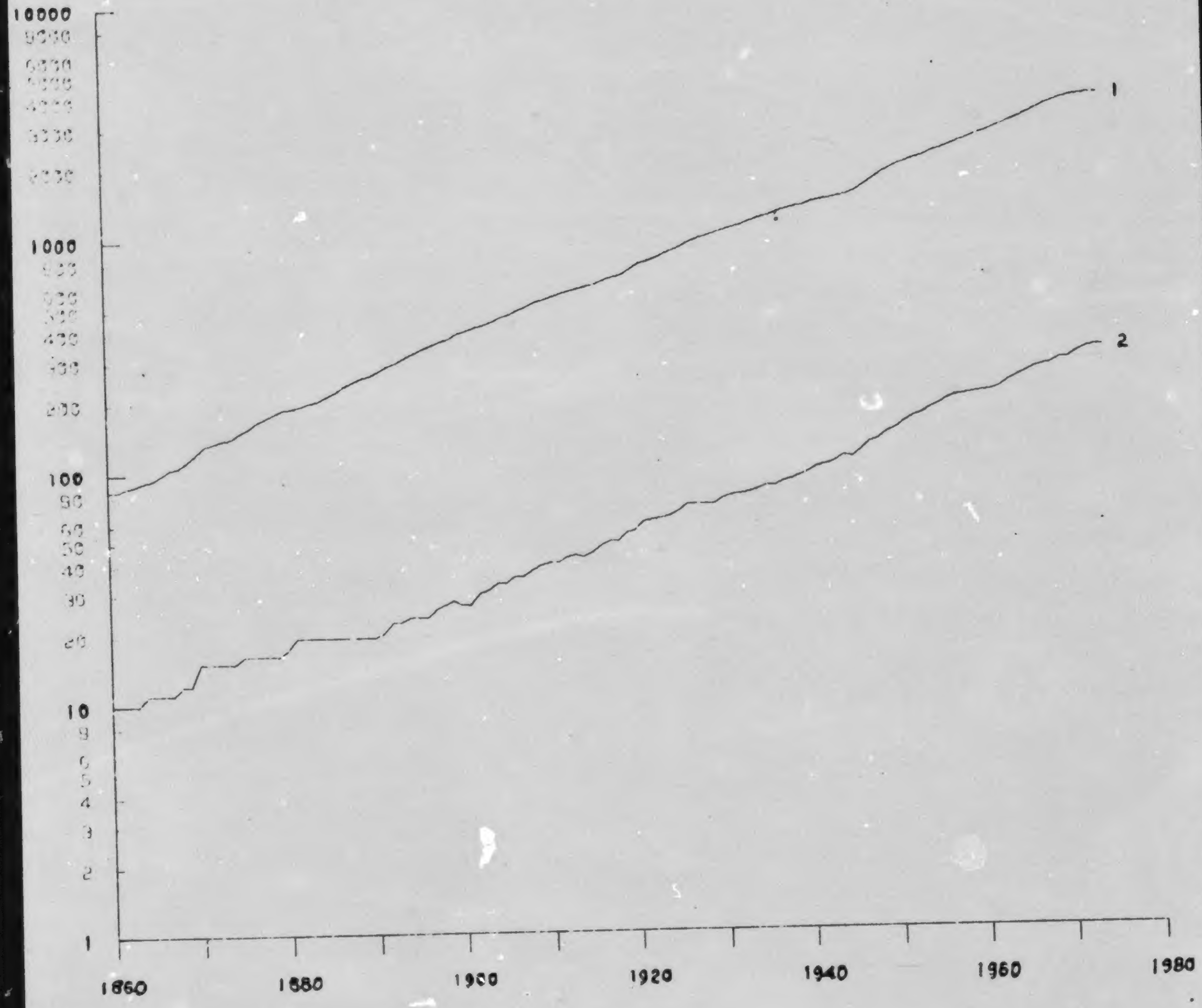


Figure 2(b)

Social science serials (2), 1860-1970
Source: CLCSSS

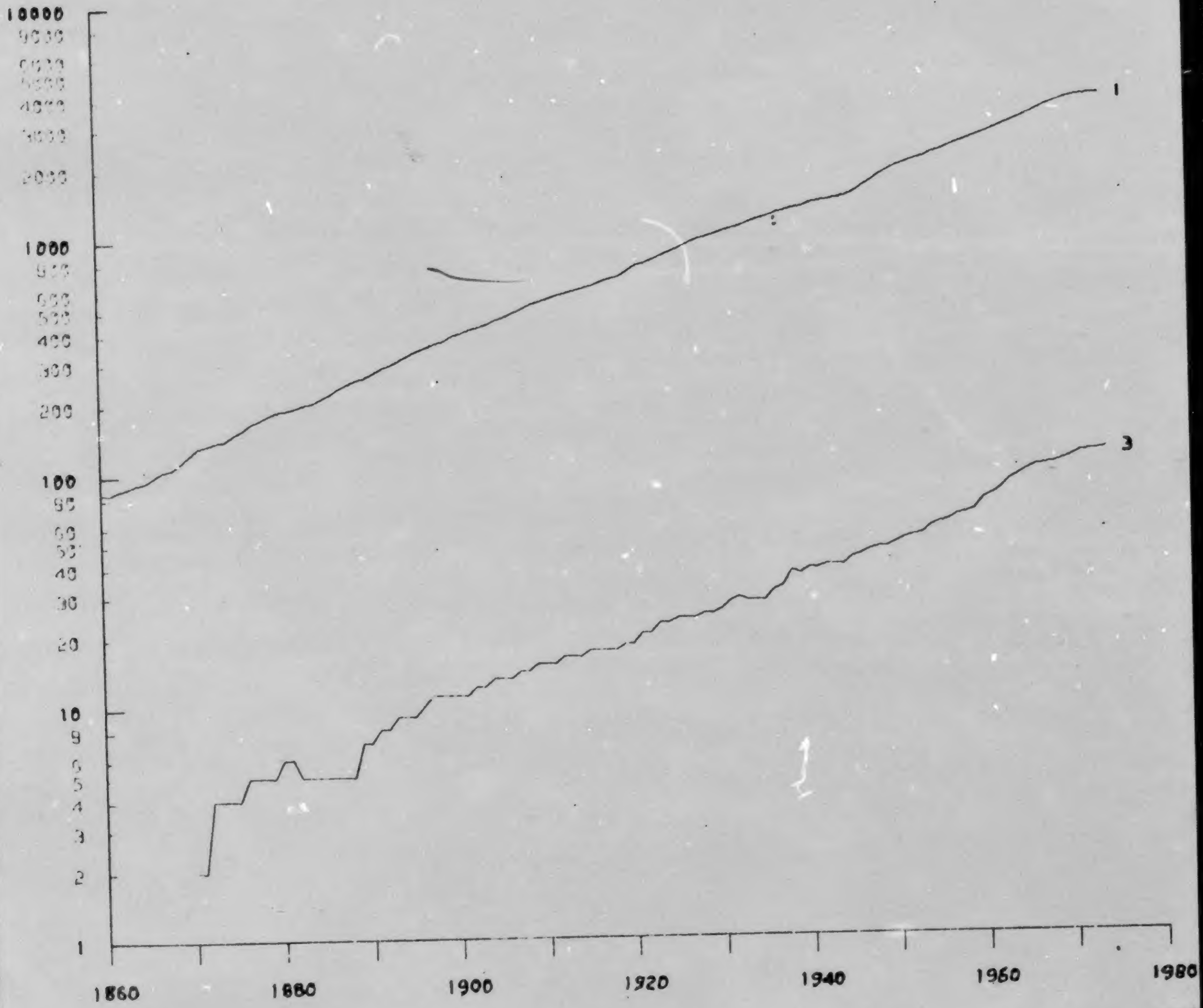


Figure 2(c)

Anthropology serials (3), 1870-1970
Source: CLOSSS

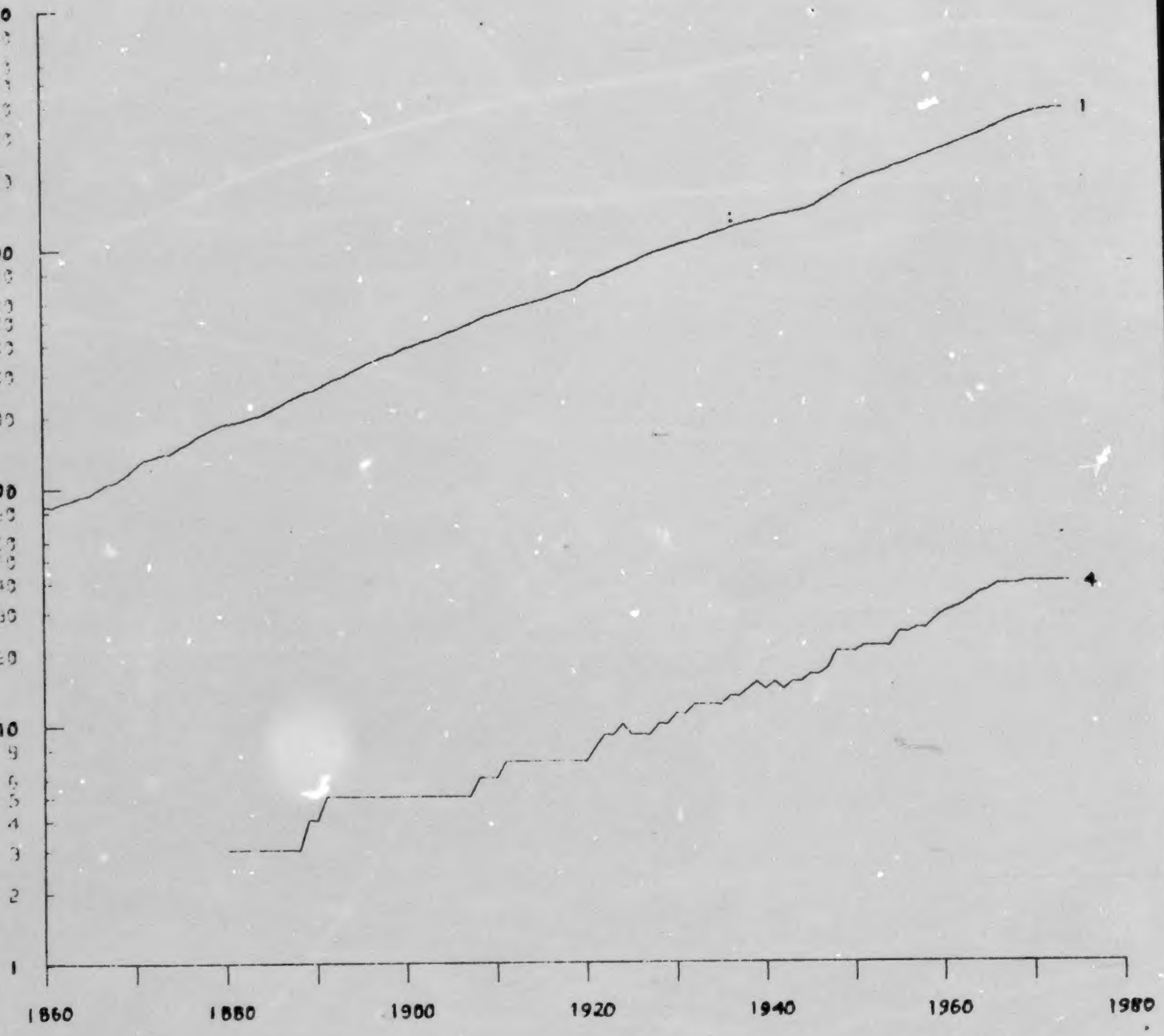


Figure 2(d)

Criminology serials (4), 1880-1970
Source: CLOSSS

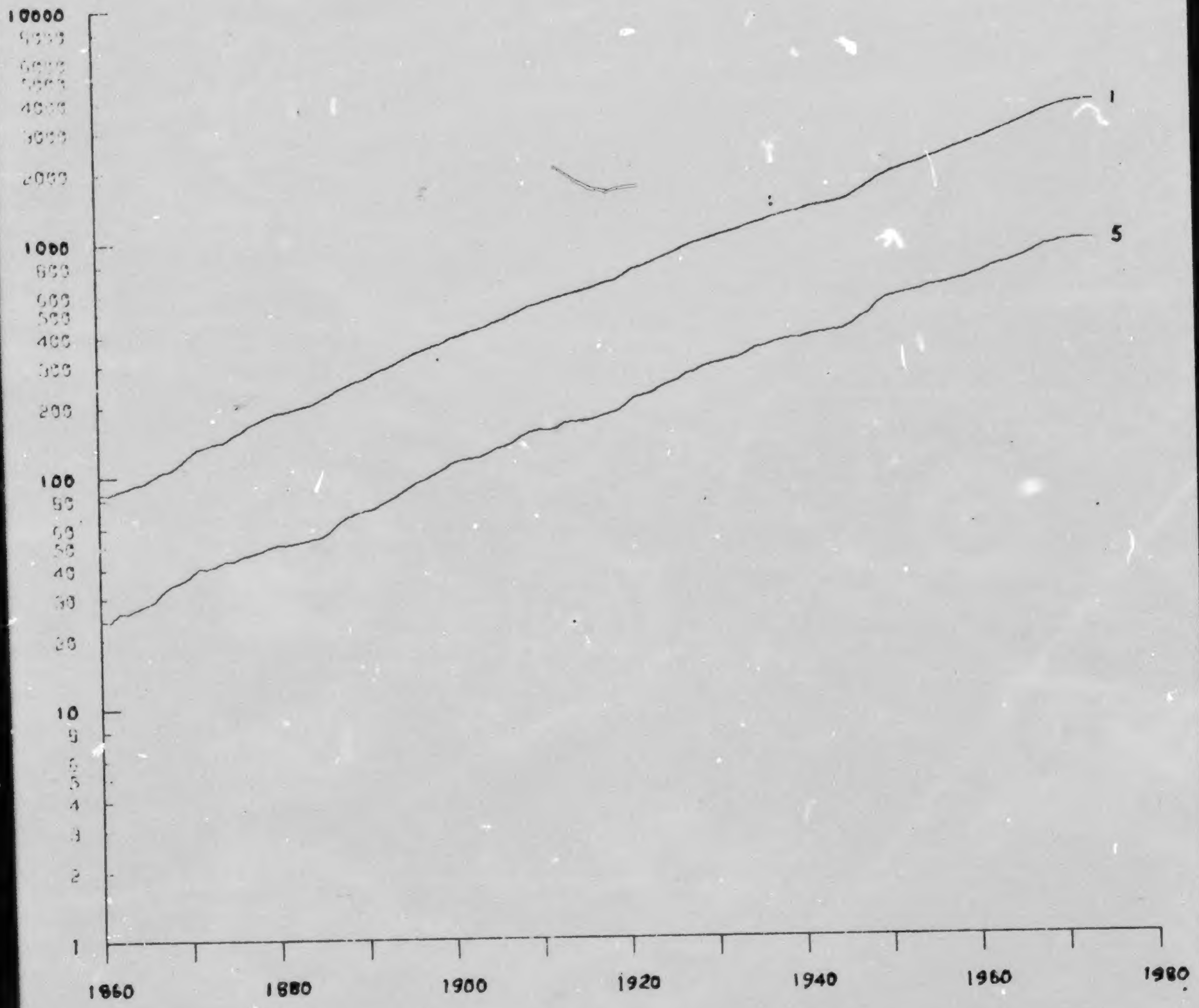


Figure 2(e)

Economics serials (5), 1860-1970
Source: CLOSSS

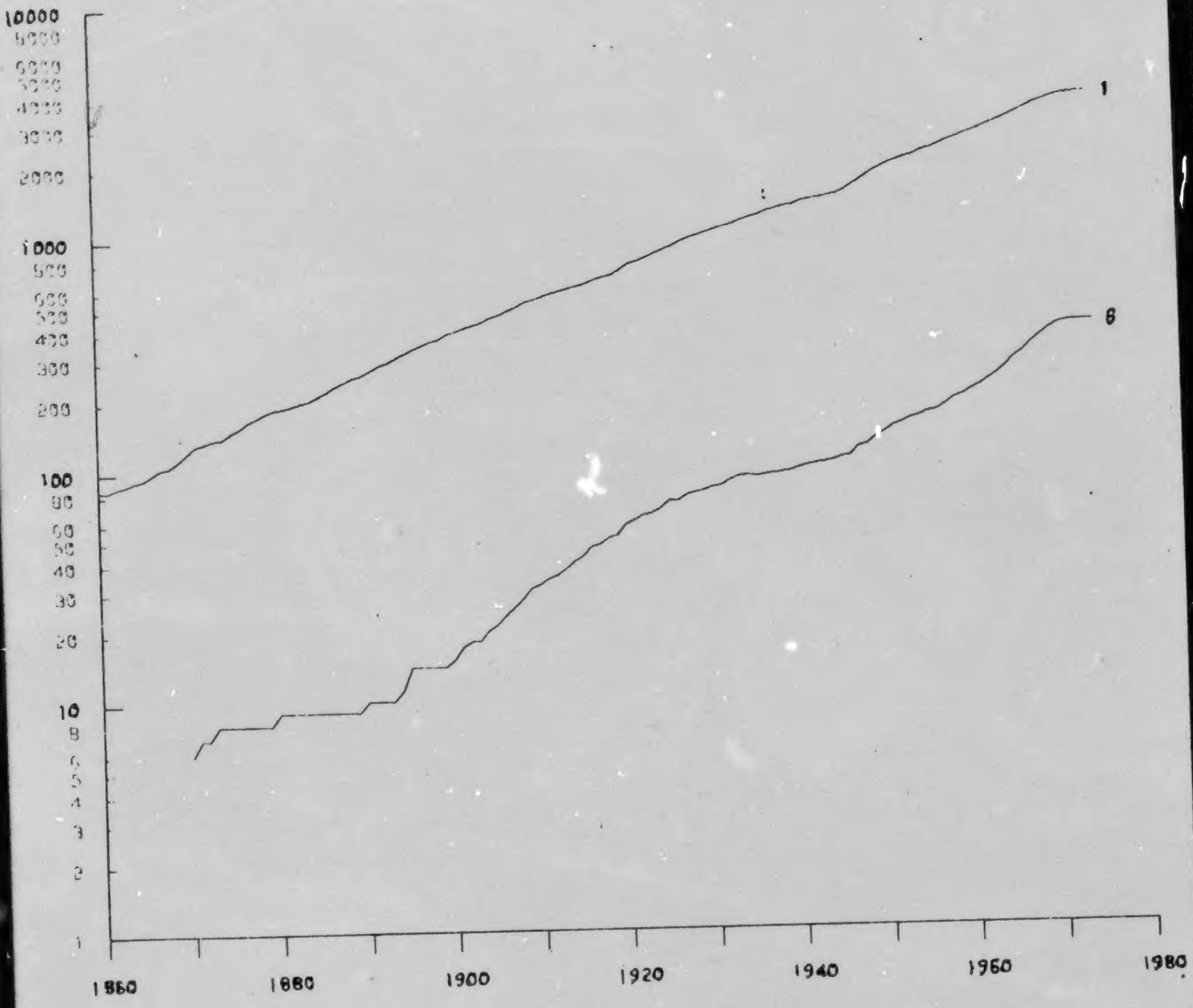


Figure 2(f)

Education serials (6), 1870-1970
Source: CLOSSS

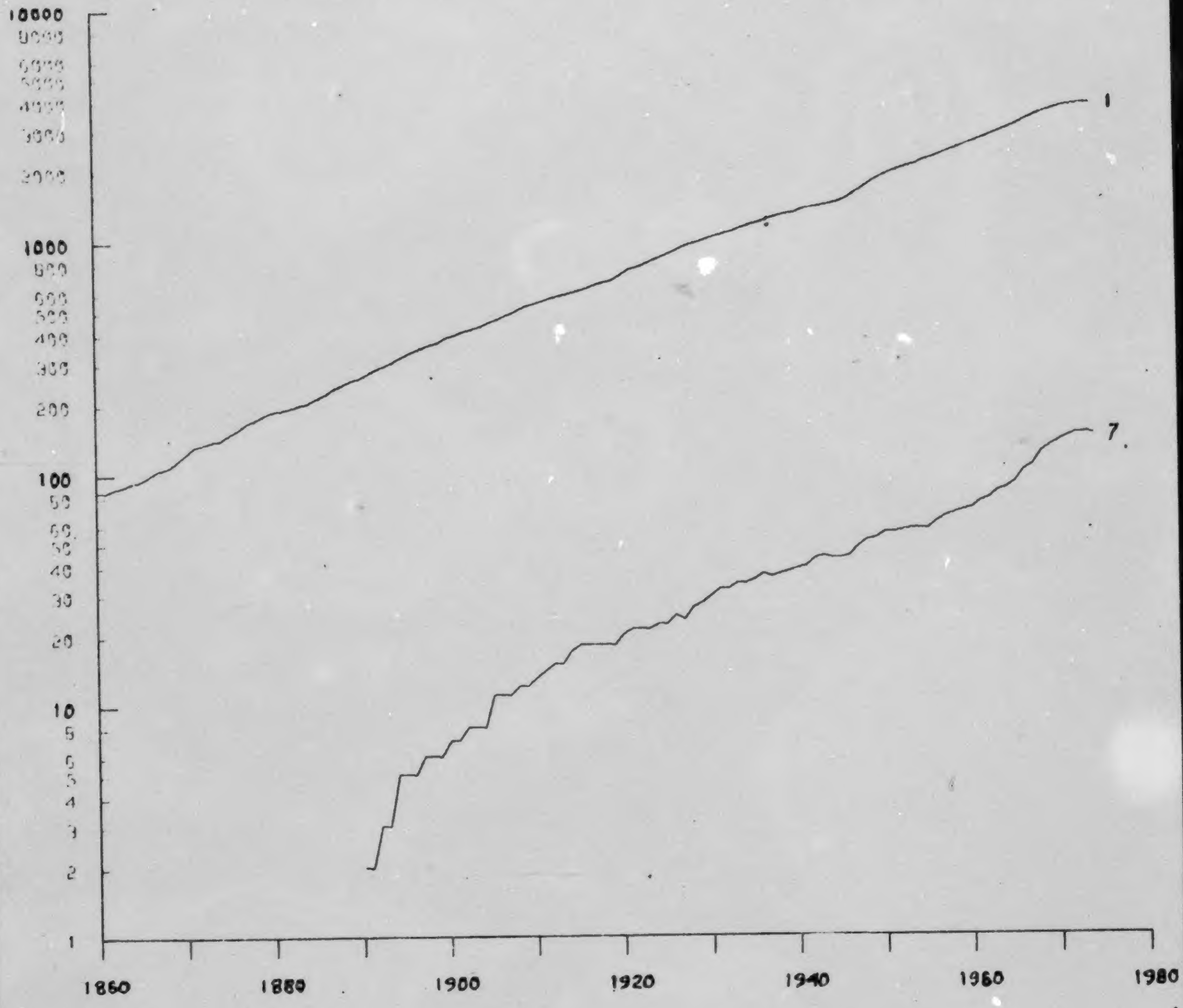


Figure 2(g)

Environmental planning serials (7), 1890-1970
Source: CLOSSS

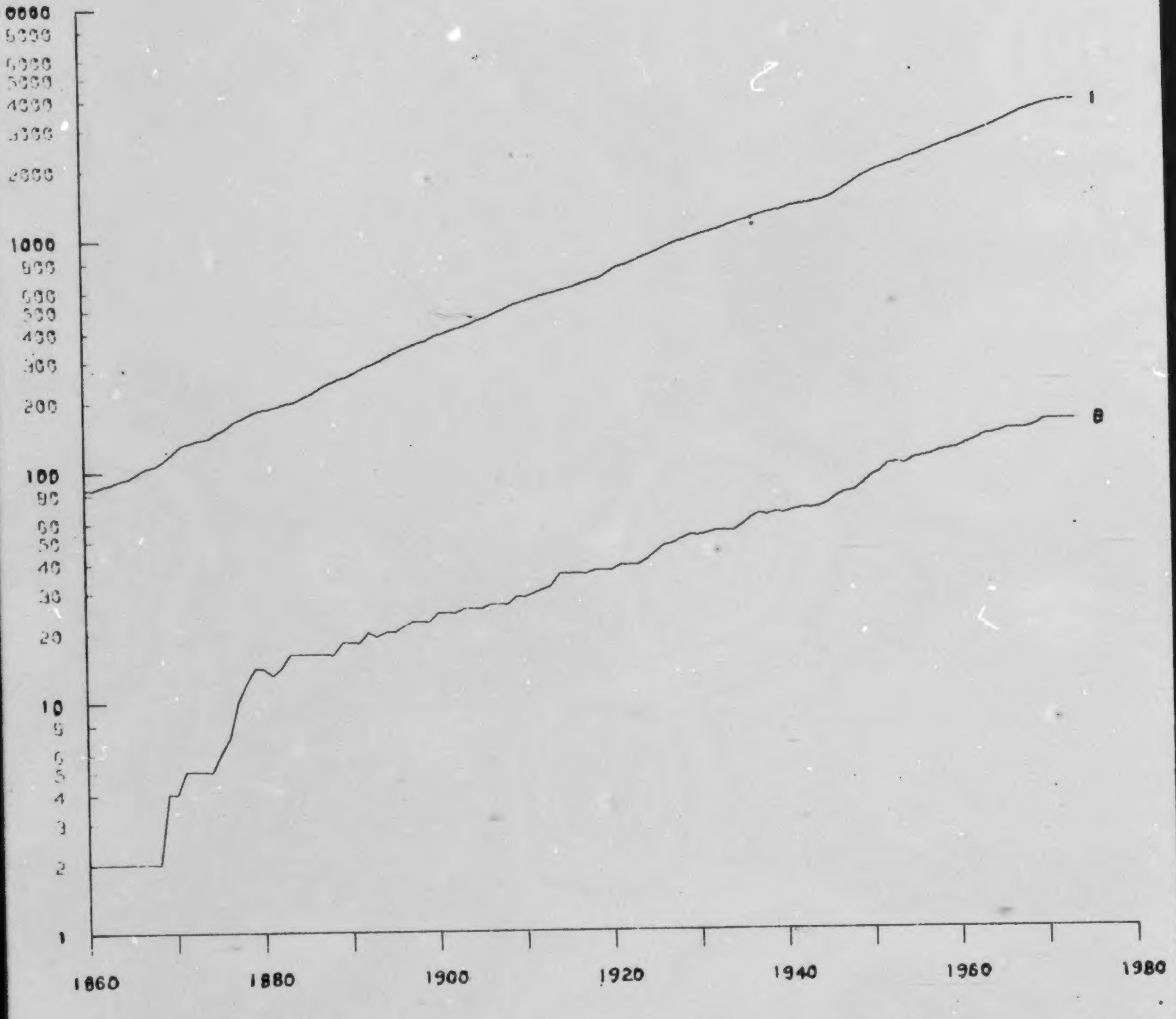


Figure 2(h)

Geography serials (8), 1860-1970
Source: CLOSSS

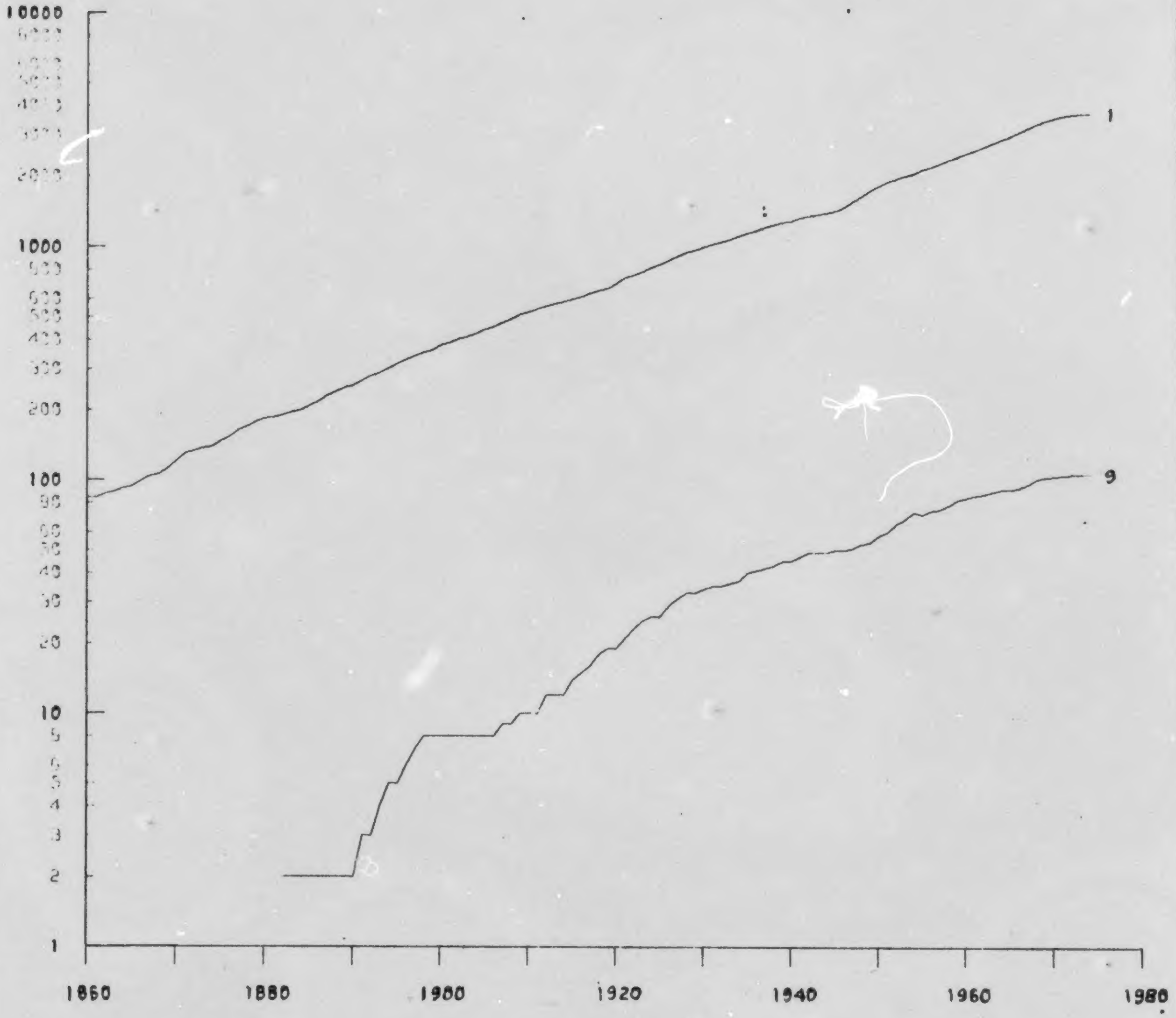


Figure 2(i)

History serials (9), 1880-1970
Source: CLOSSS

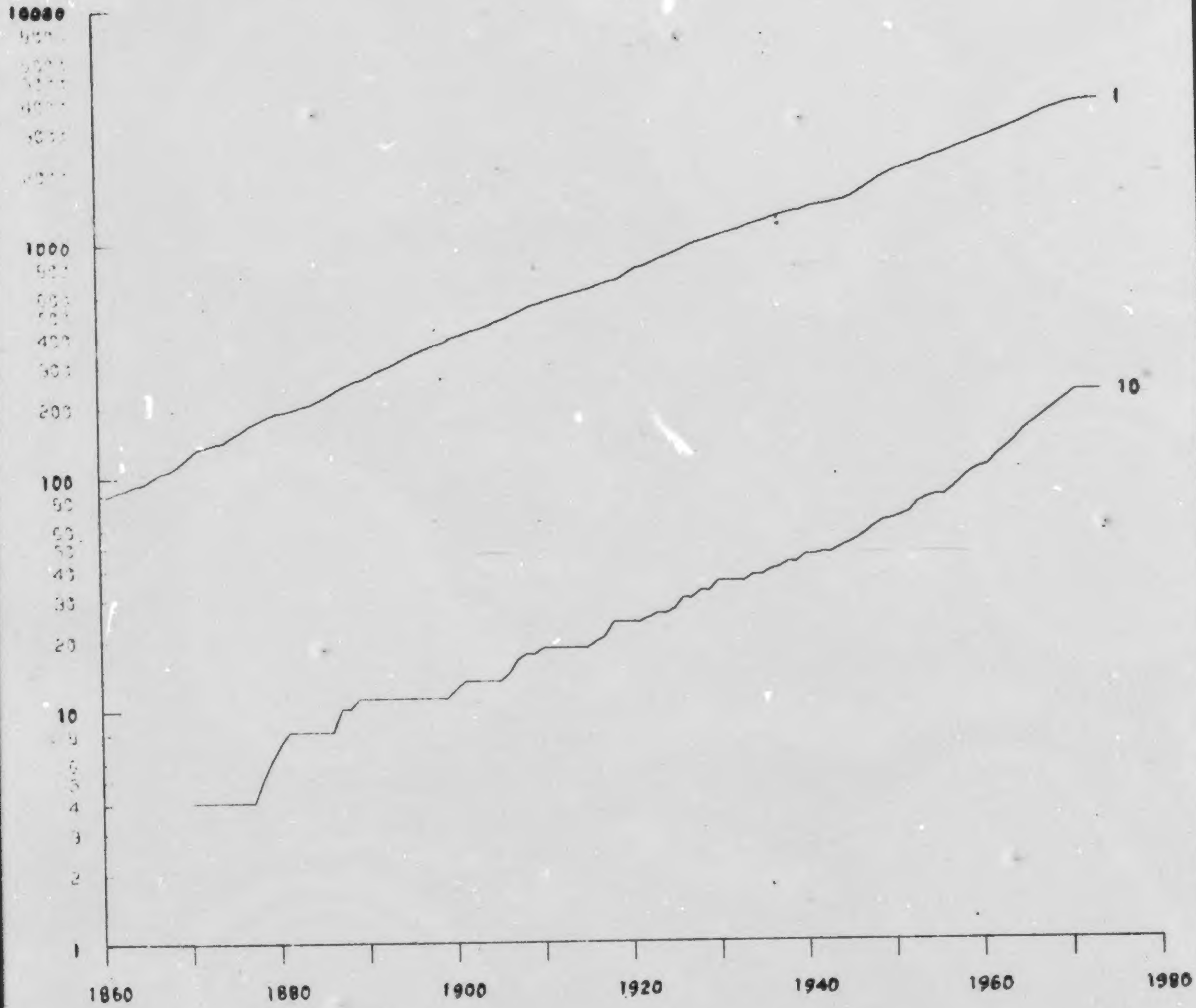


Figure 2(j)

Linguistics serials (10), 1870-1970
Source: CLOSSS

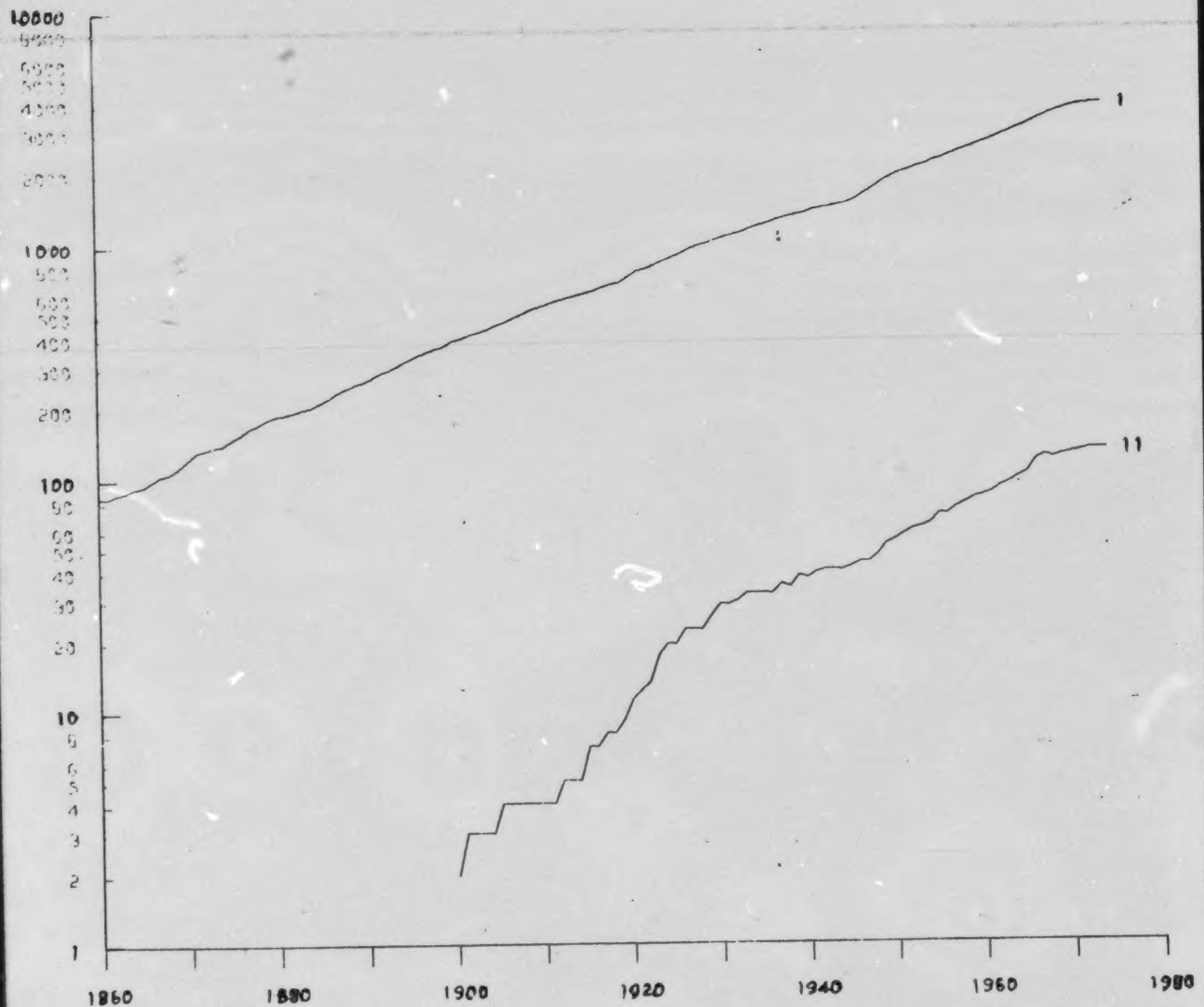


Figure 2(k)

Management serials (11), 1900-1970
Source: CLOSSS

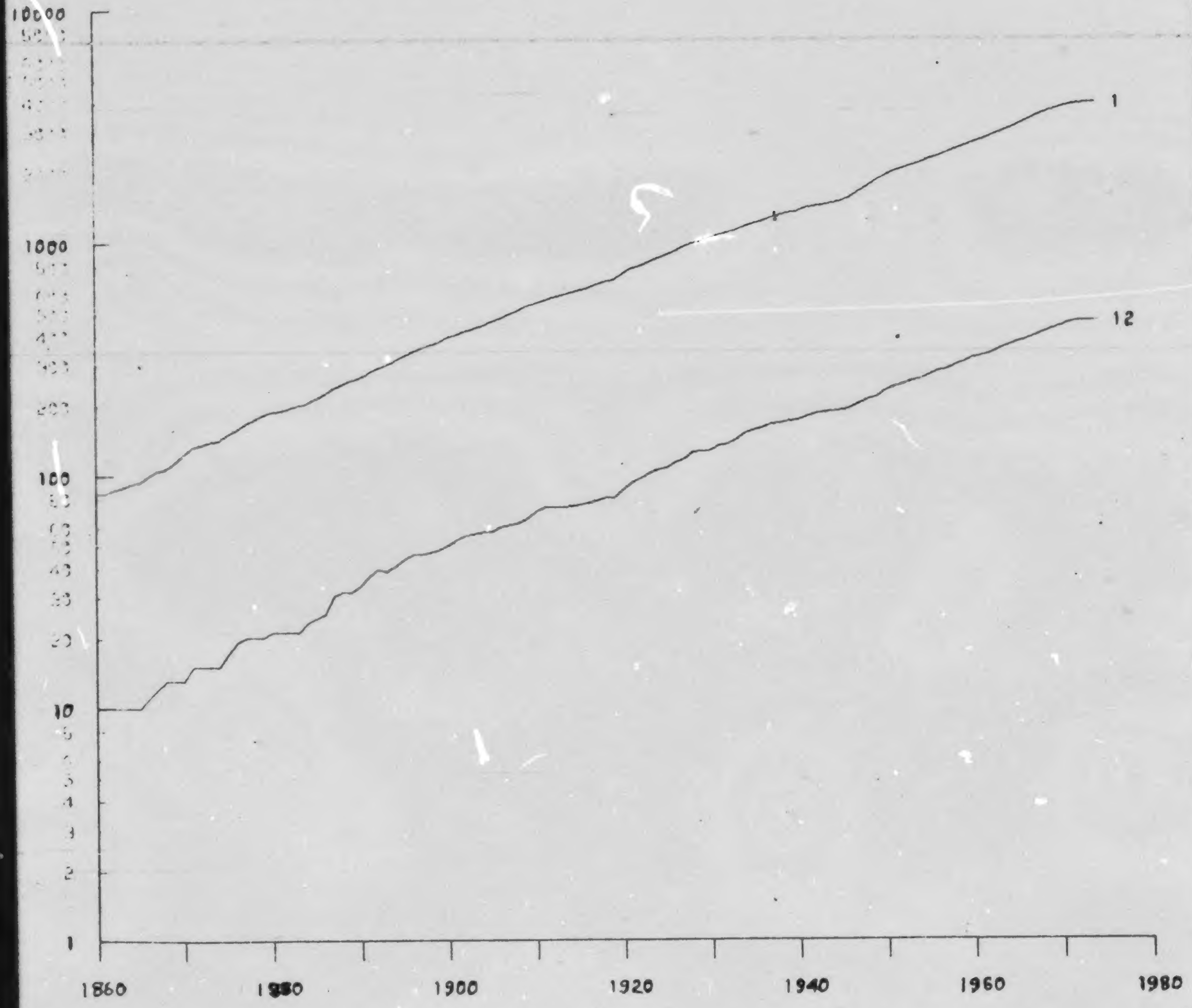


Figure 2(1)

Political science (12) serials, 1860-1970
Source: CLOSSS

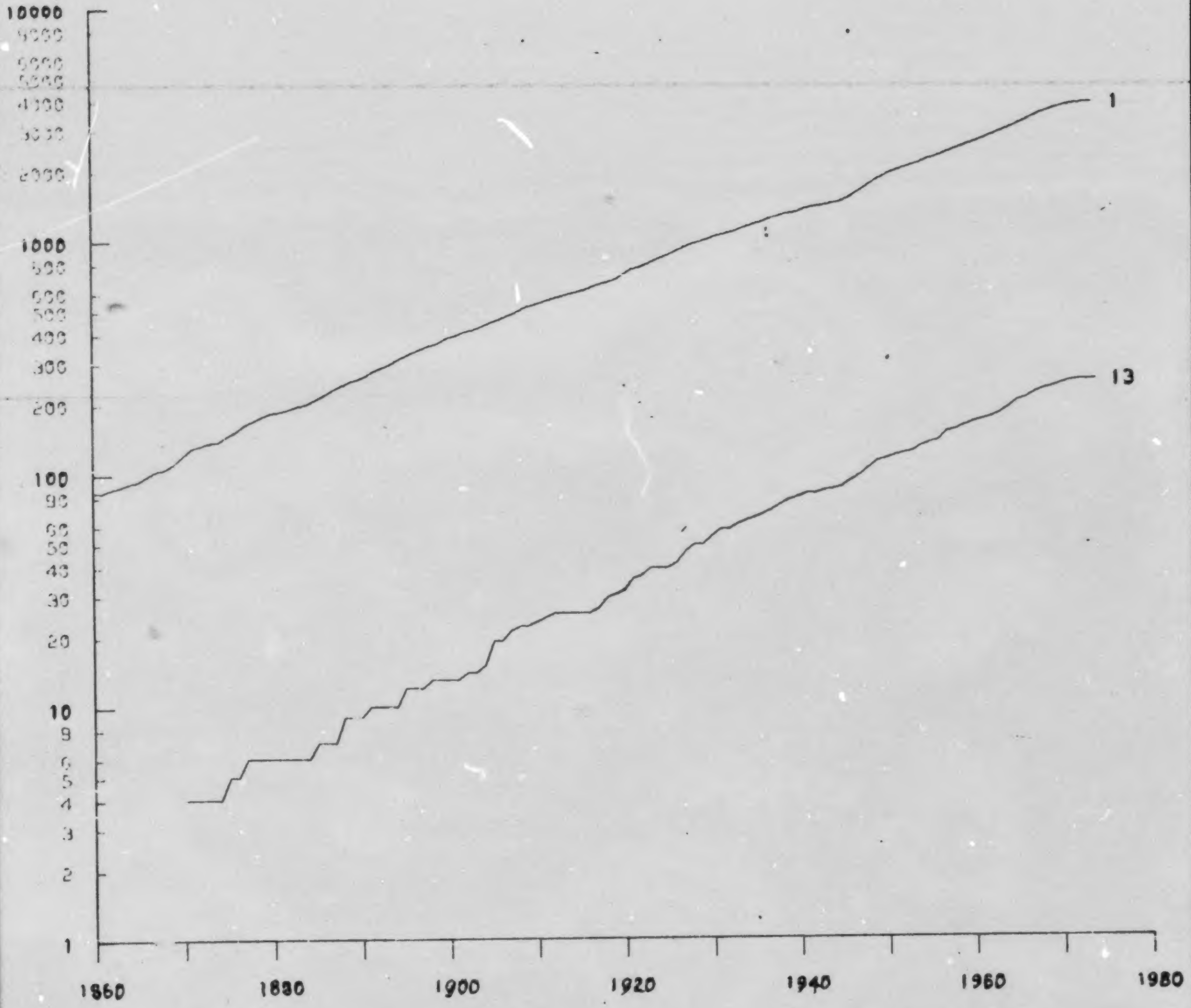
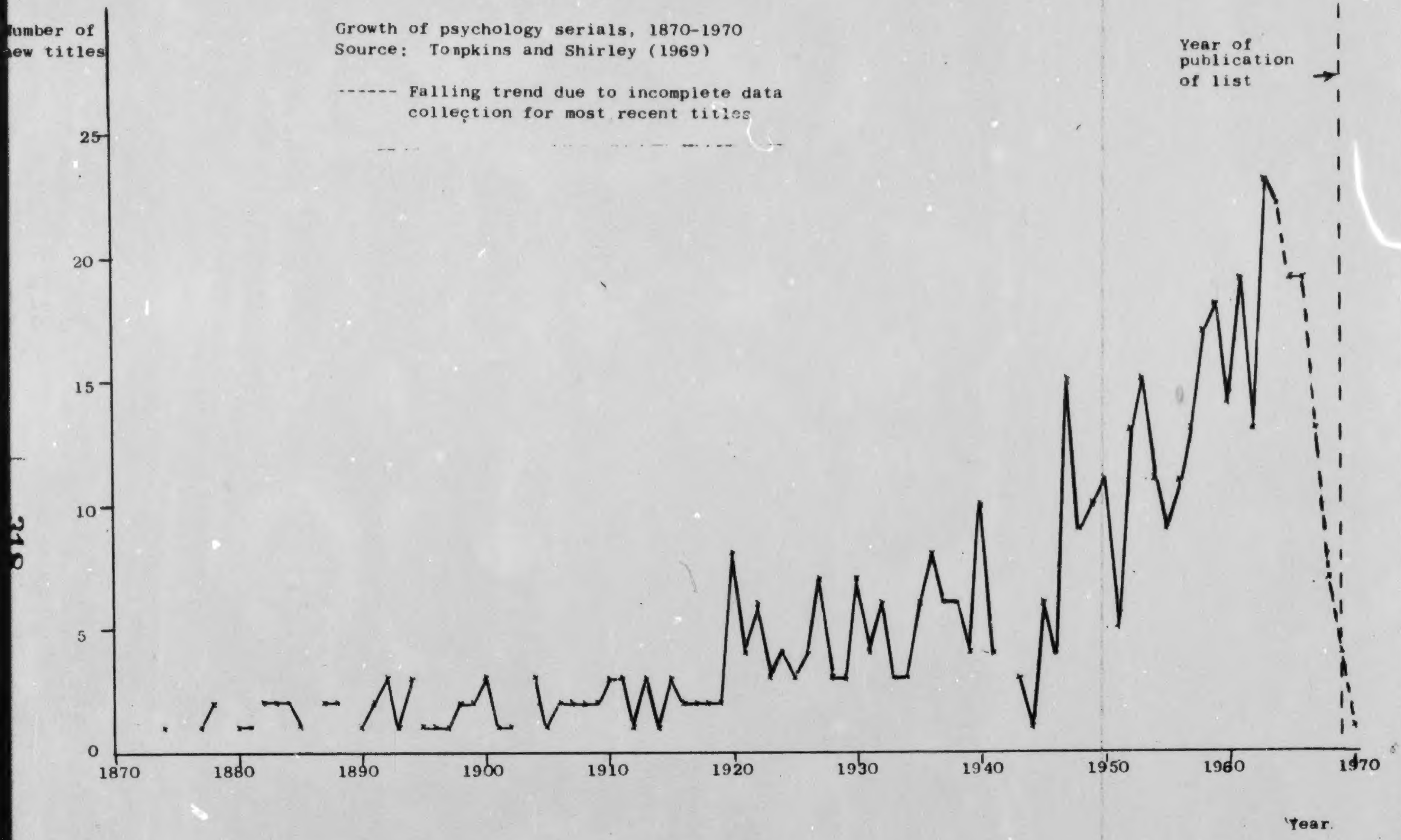


Figure 2(m)

Psychology serials (13), 1870-1970
Source: CLOSSS

Figure 2(n)



Growth of psychology serials, 1870-1970
Source: Tompkins and Shirley (1969)

------ Falling trend due to incomplete data collection for most recent titles

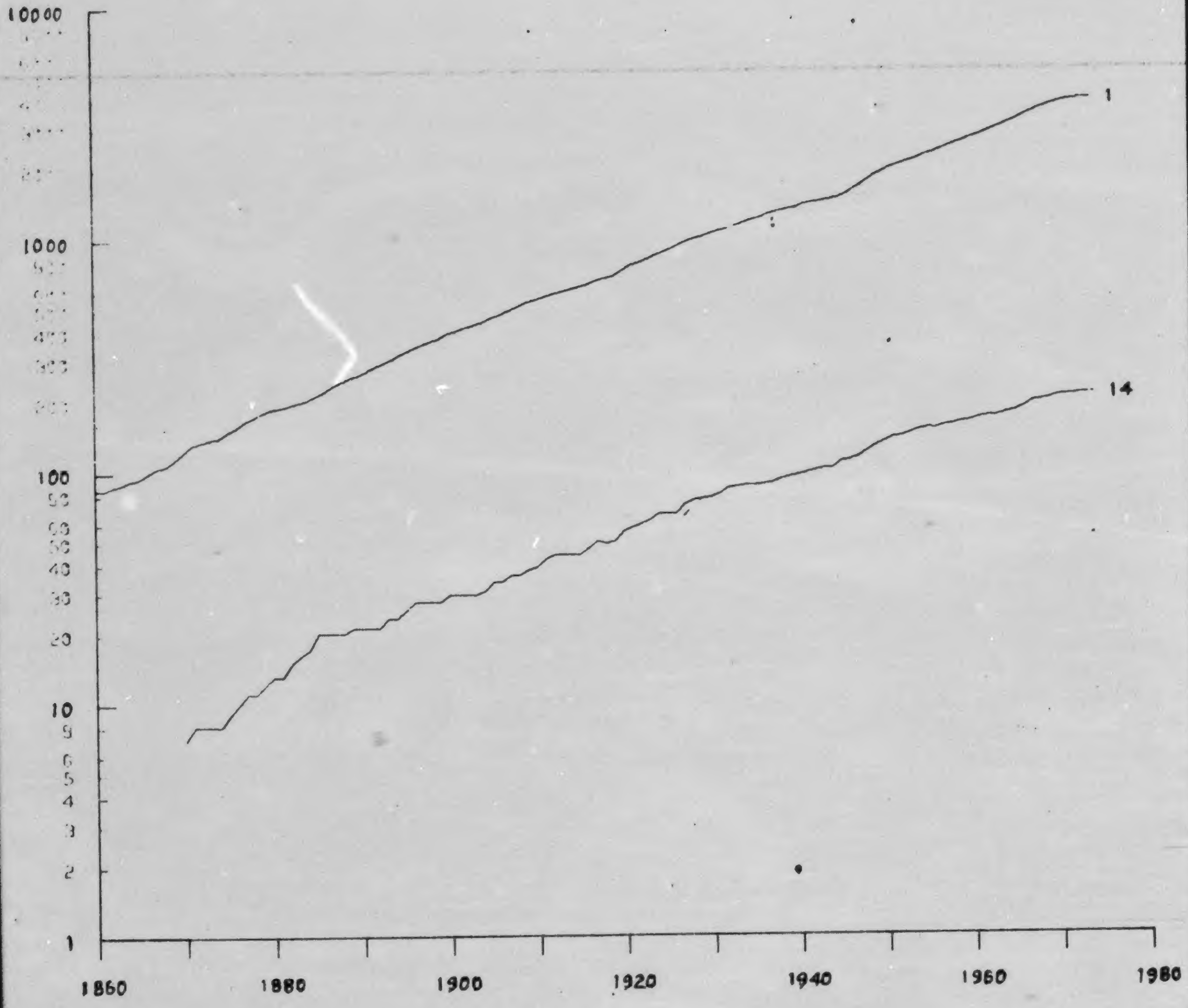


Figure 2(o)

Social policy serials (14), 1870-1970
Source: CLOSSS

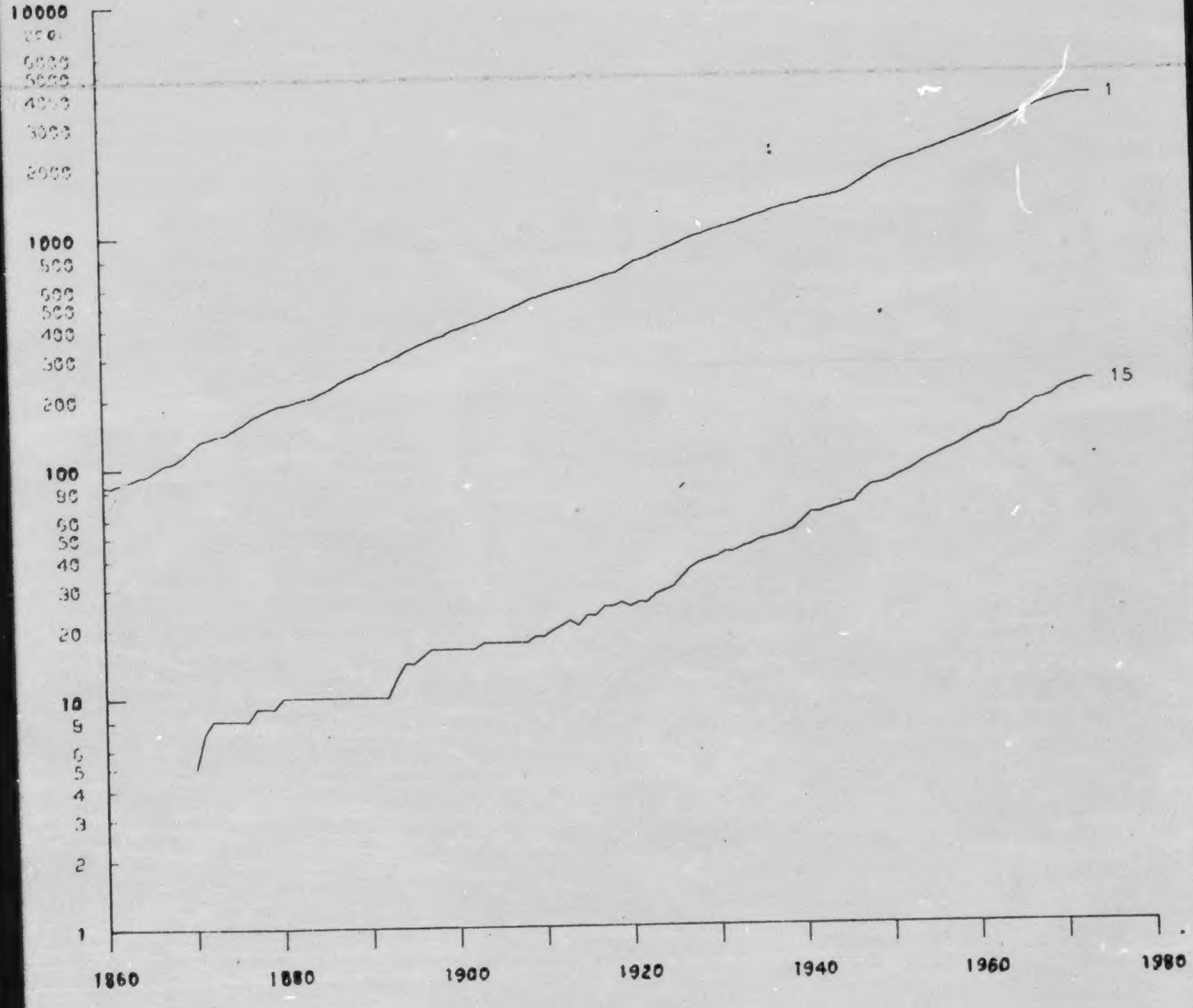


Figure 2(p)

Sociology serials (15), 1870-1970
Source: CLOSSS

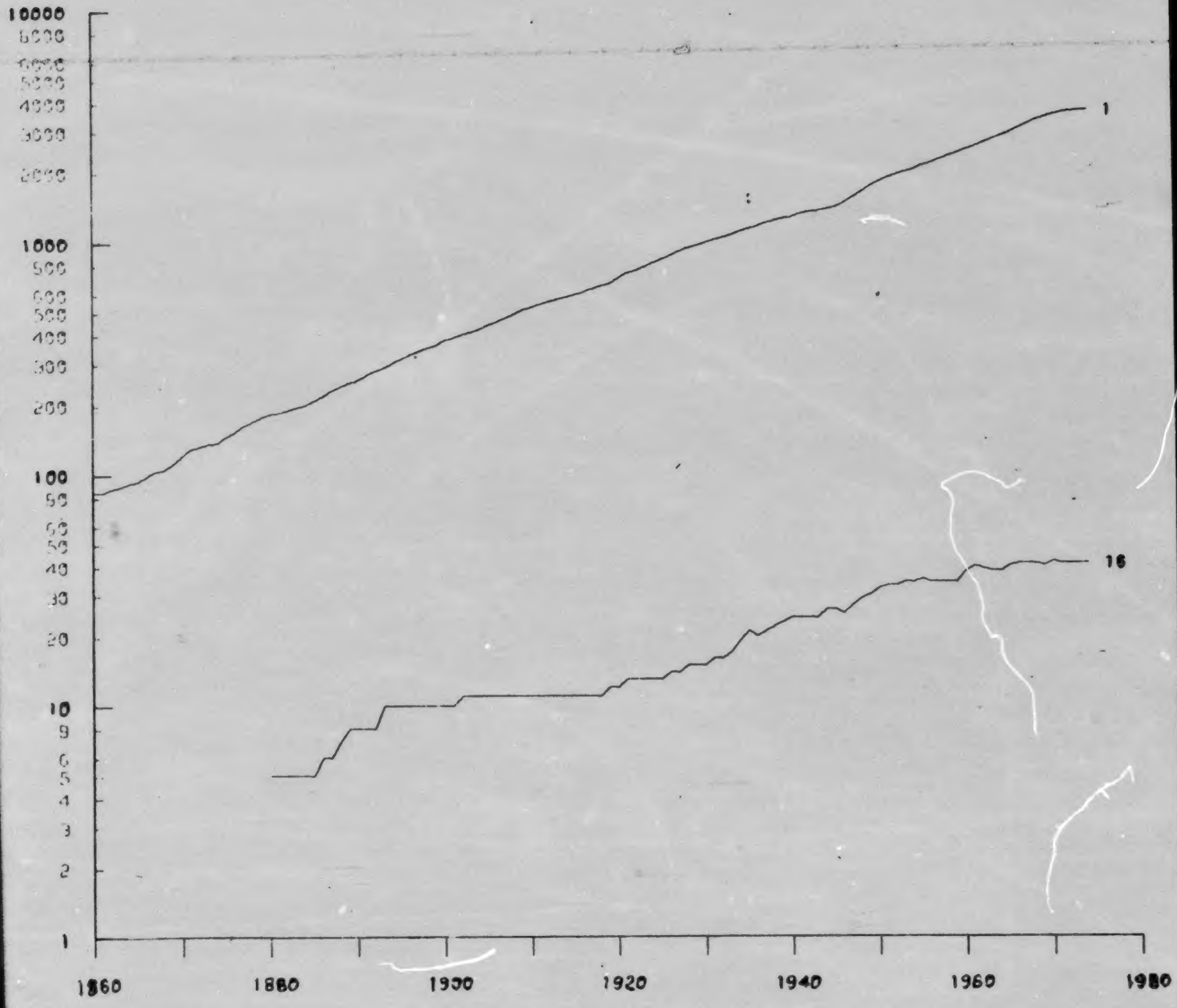


Figure 2(q)

Statistics serials (16), 1880-1970
Source: CLOSSS

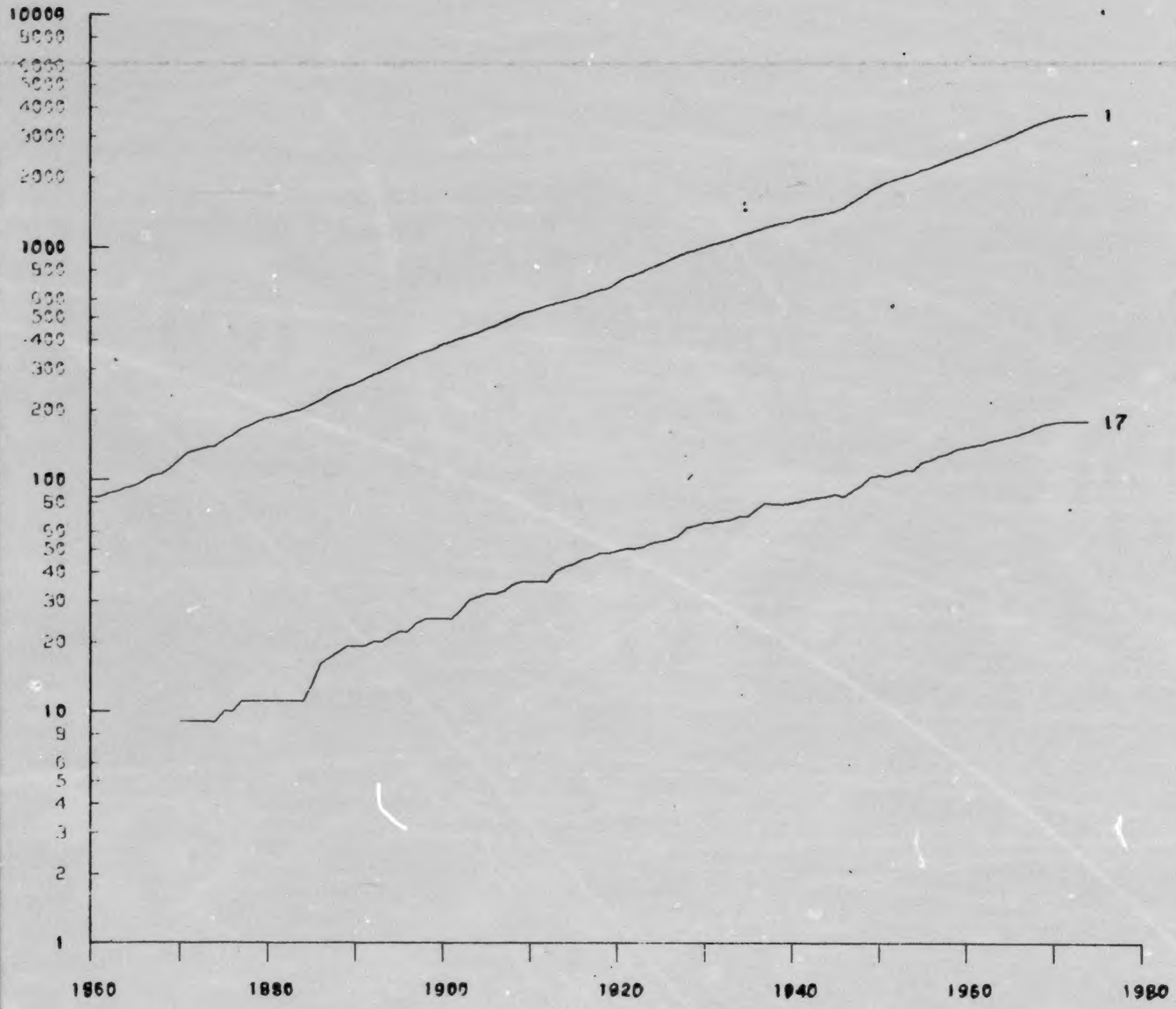


Figure 2(r)

Law serials (17), 1870-1970
Source: CLOSSS

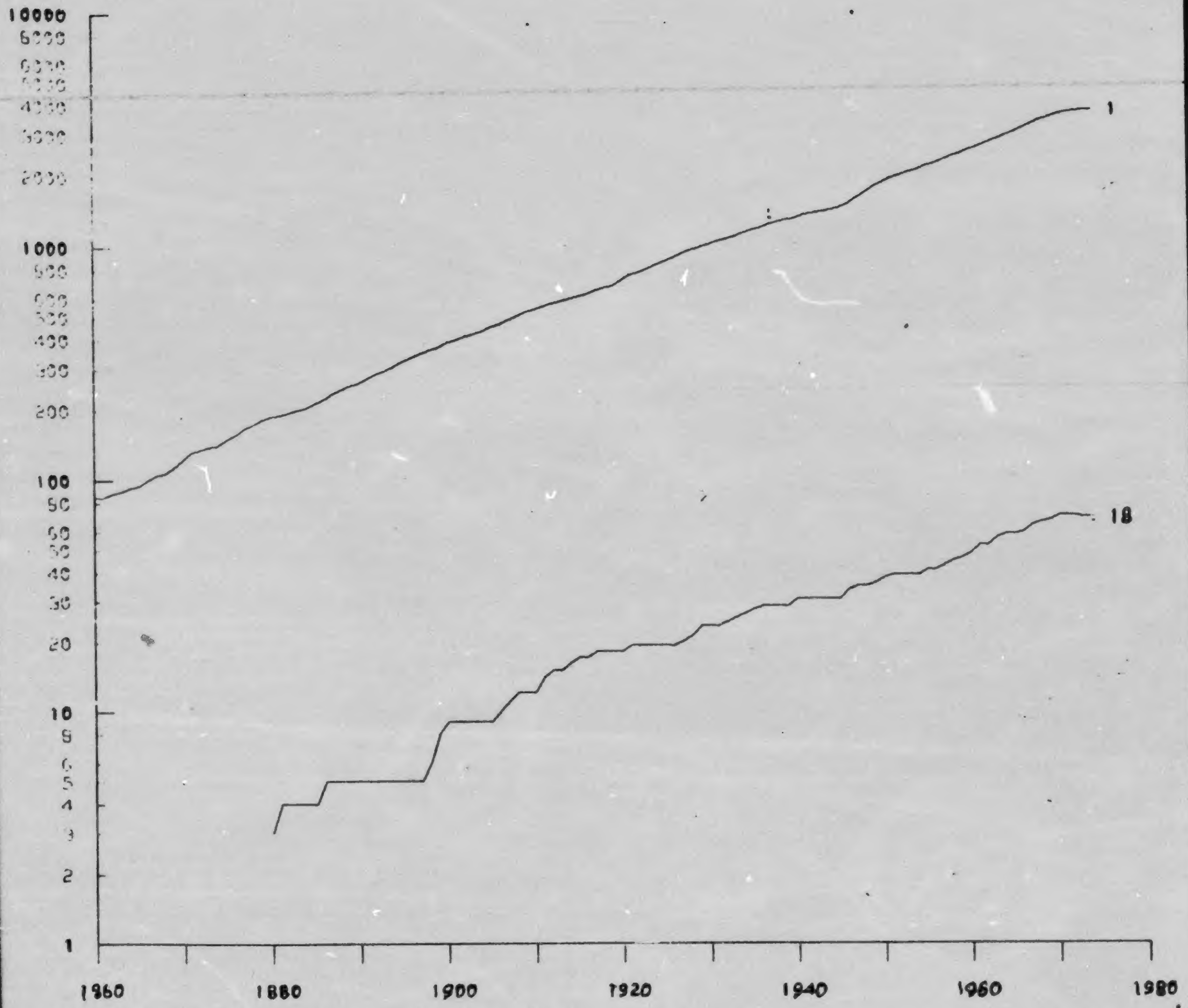


Figure 2(s)

Library science serials (18), 1880-1970
Source: CLOSSS

Figure 3

Growth curves for serials by form of serial

Key to graphs

1 Time analysis for all serials
2 Time analysis for serials with field 13 coded A (Periodical)
3 Time analysis for serials with field 13 coded B, C, D, E, F, H, N (Secondary Services)
4 Time analysis for serials with field 13 coded G (Statistics)
5 Time analysis for serials with field 13 coded I (Yearbook)
6 Time analysis for serials with field 13 coded J (Reports)
7 Time analysis for serials with field 13 coded K (Conference Proceedings)
8 Time analysis for serials with field 13 coded P (Monograph series)

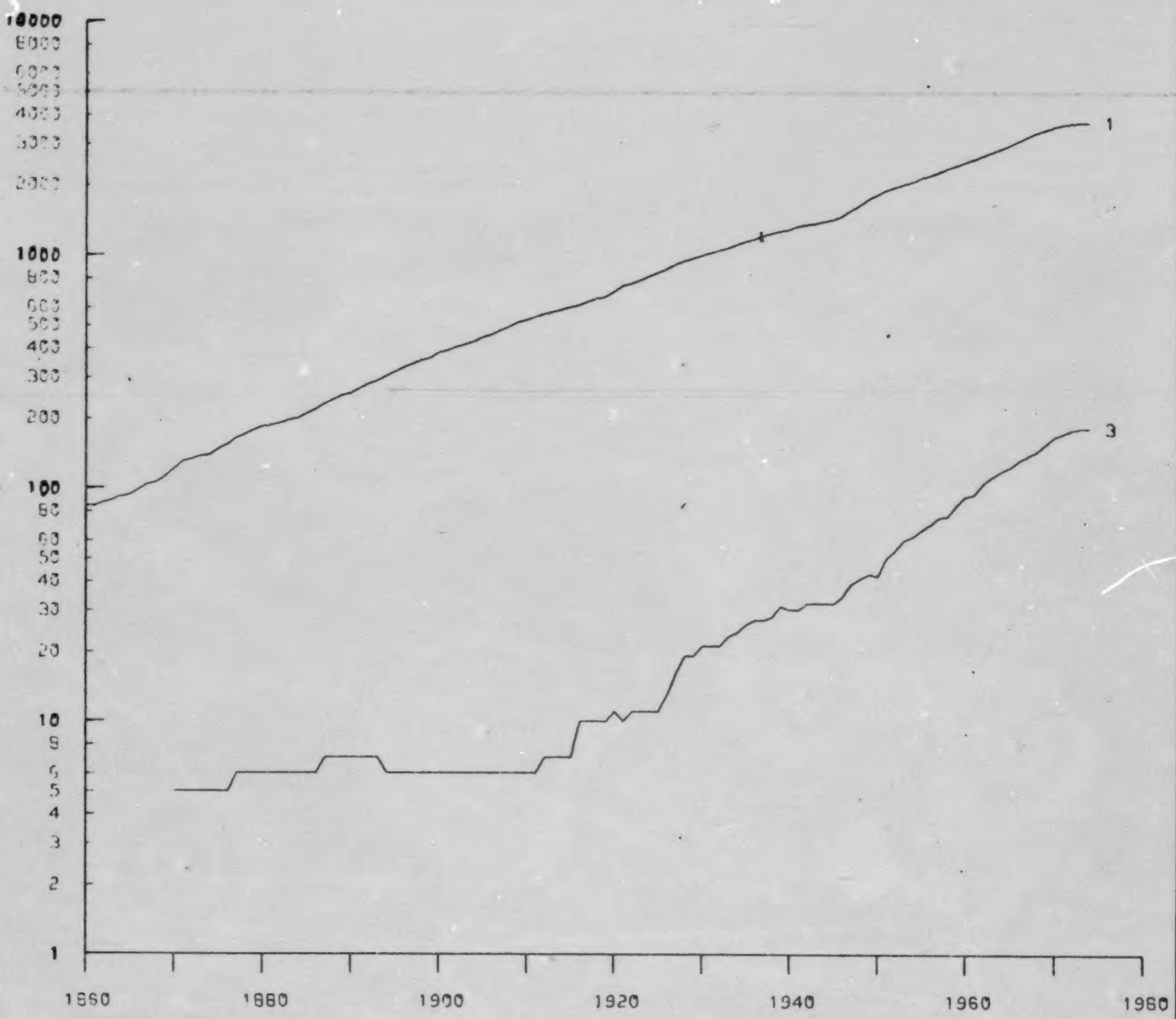


Figure 3(c)

Growth curve for secondary services (3),
1870-1970
Source: CLOSSS

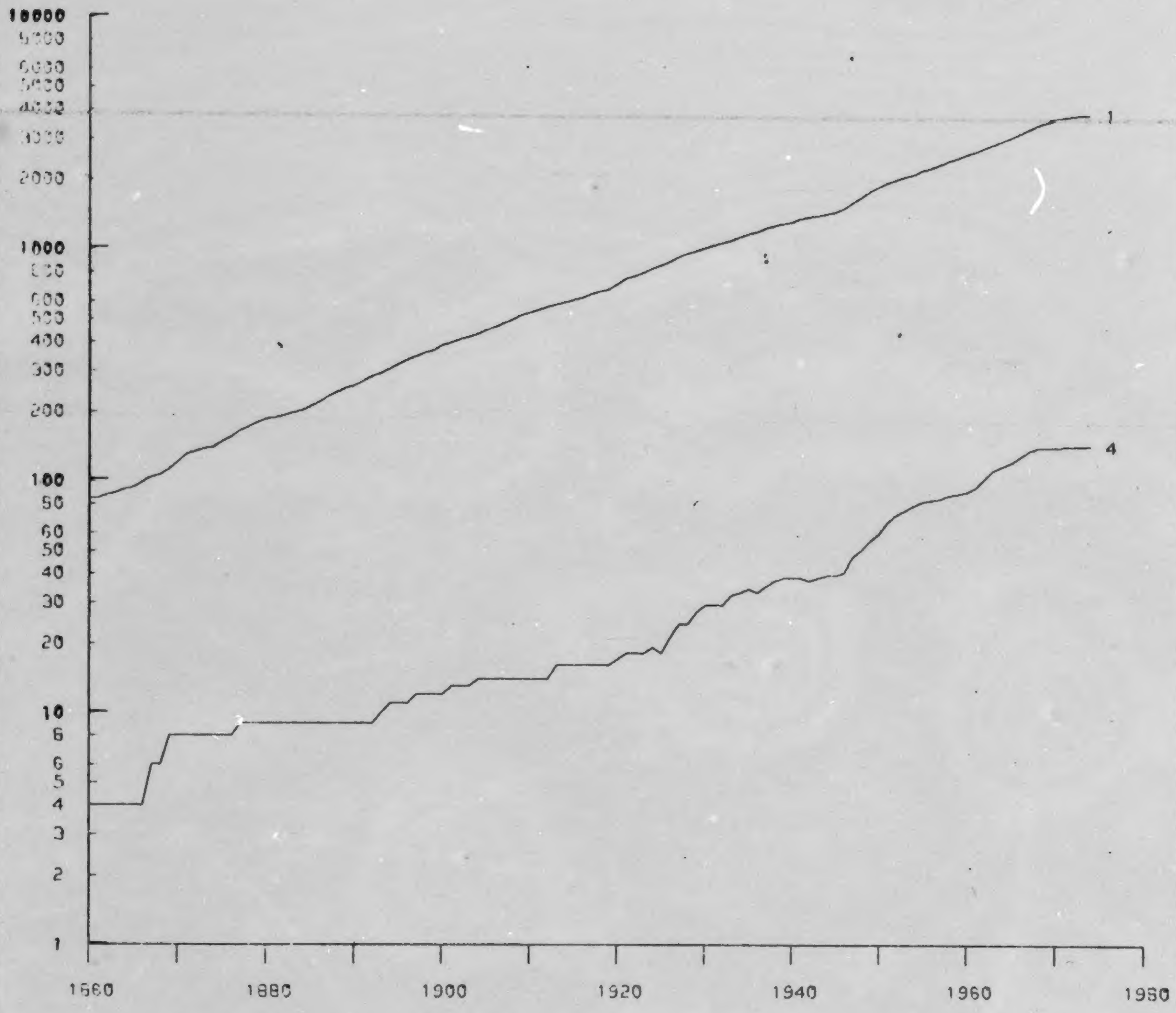


Figure 3(d)

Growth curve for statistical serials (4),
1860-1970
Source: CLOSSS

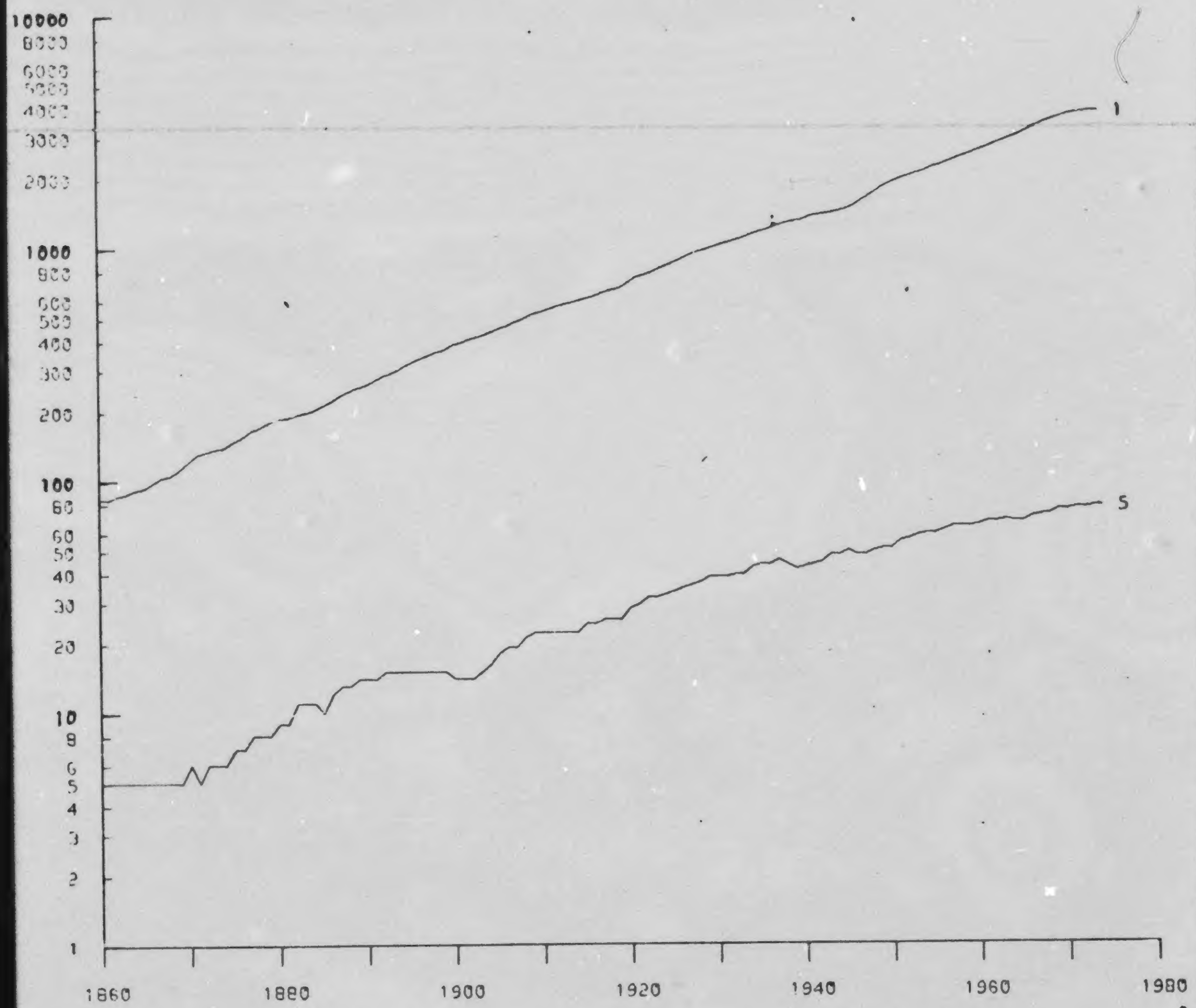


Figure 3(e)

Growth curve for yearbooks (5), 1860-1970
Source: CLOSSS

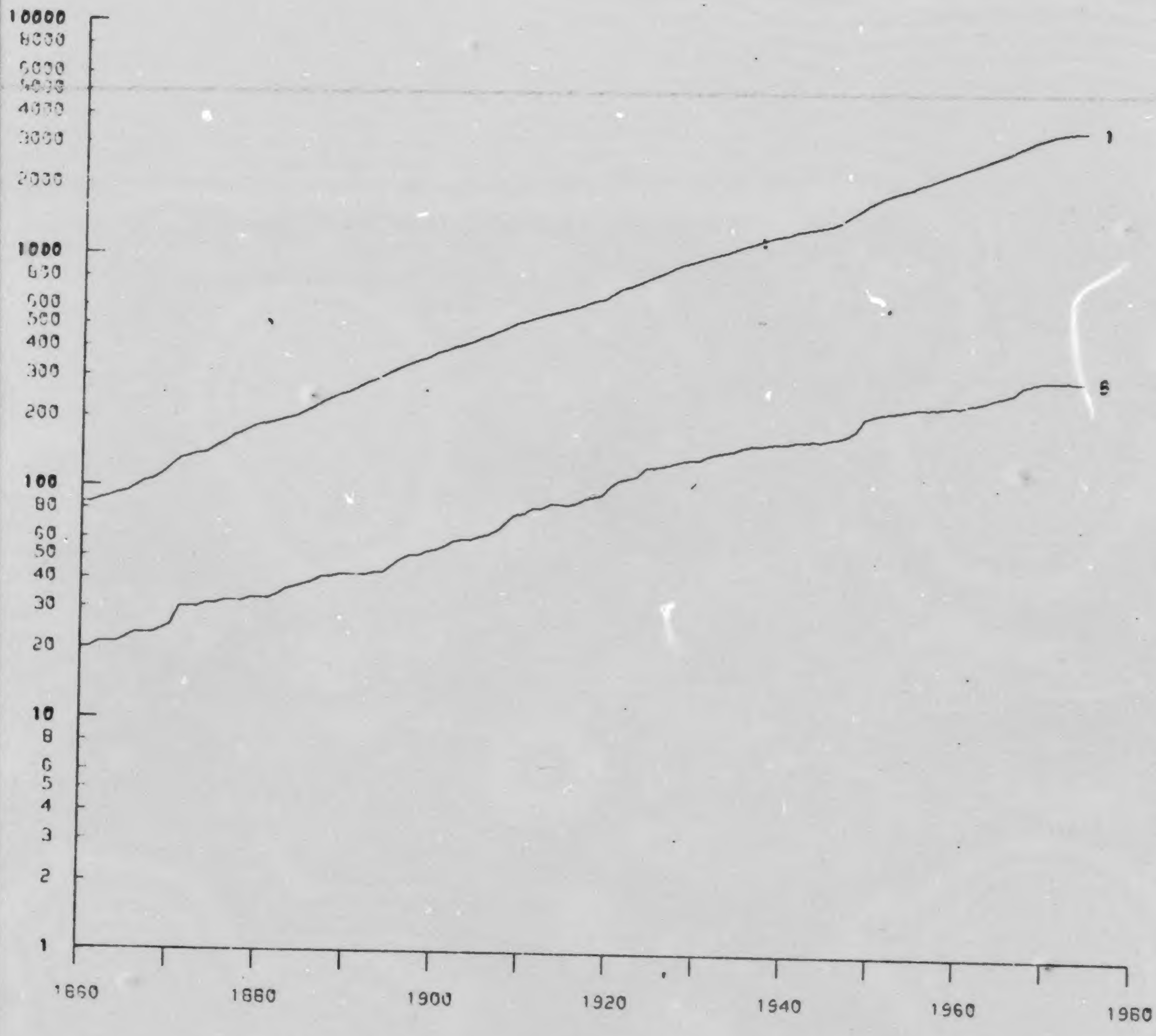


Figure 3(f)

Growth curve for serially published reports
(6), 1860-1970
Source: CLOSSS

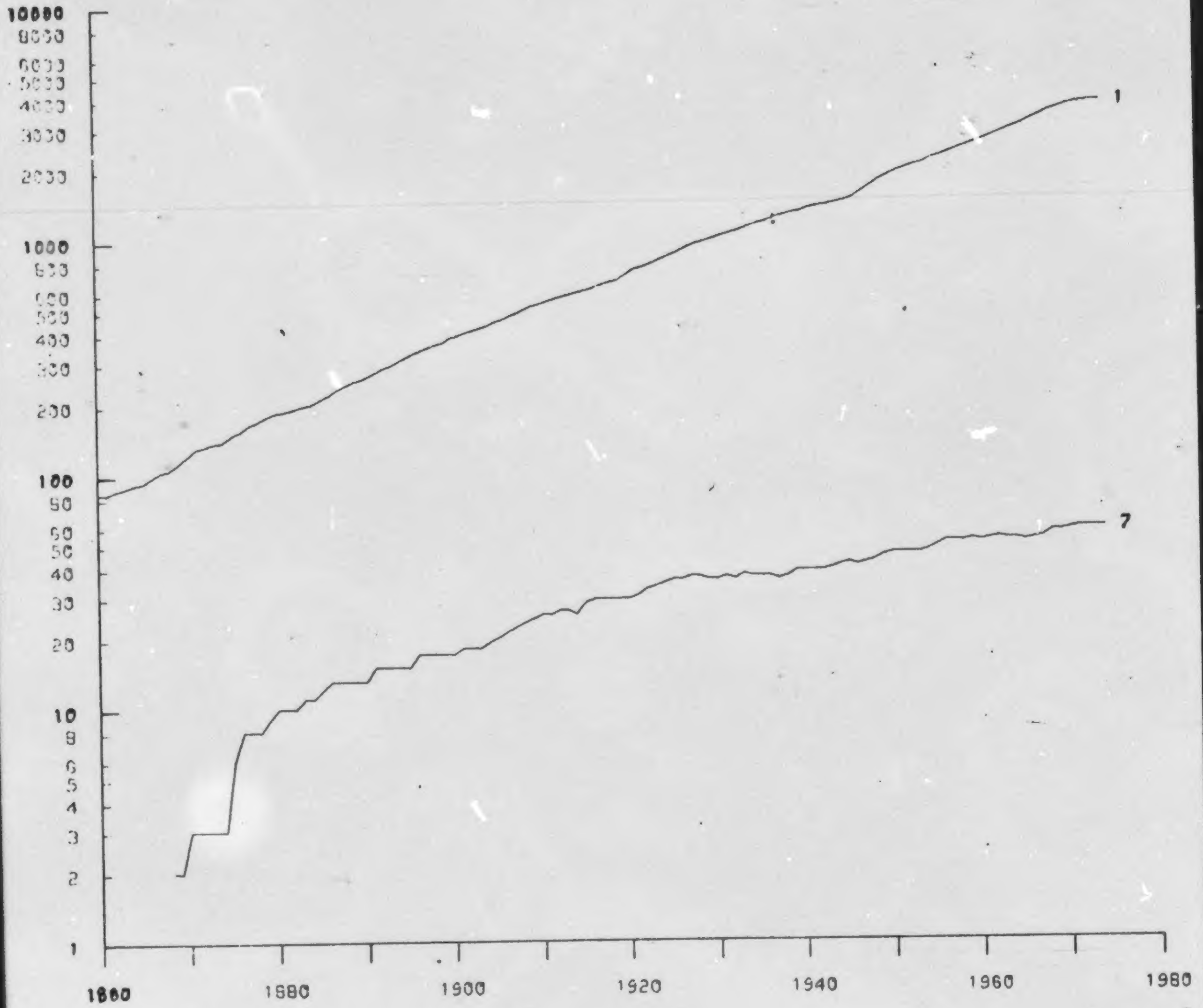


Figure 3(g)

Growth curve for serially published
conference proceedings (7), 1870-1970
Source: CLOSSS

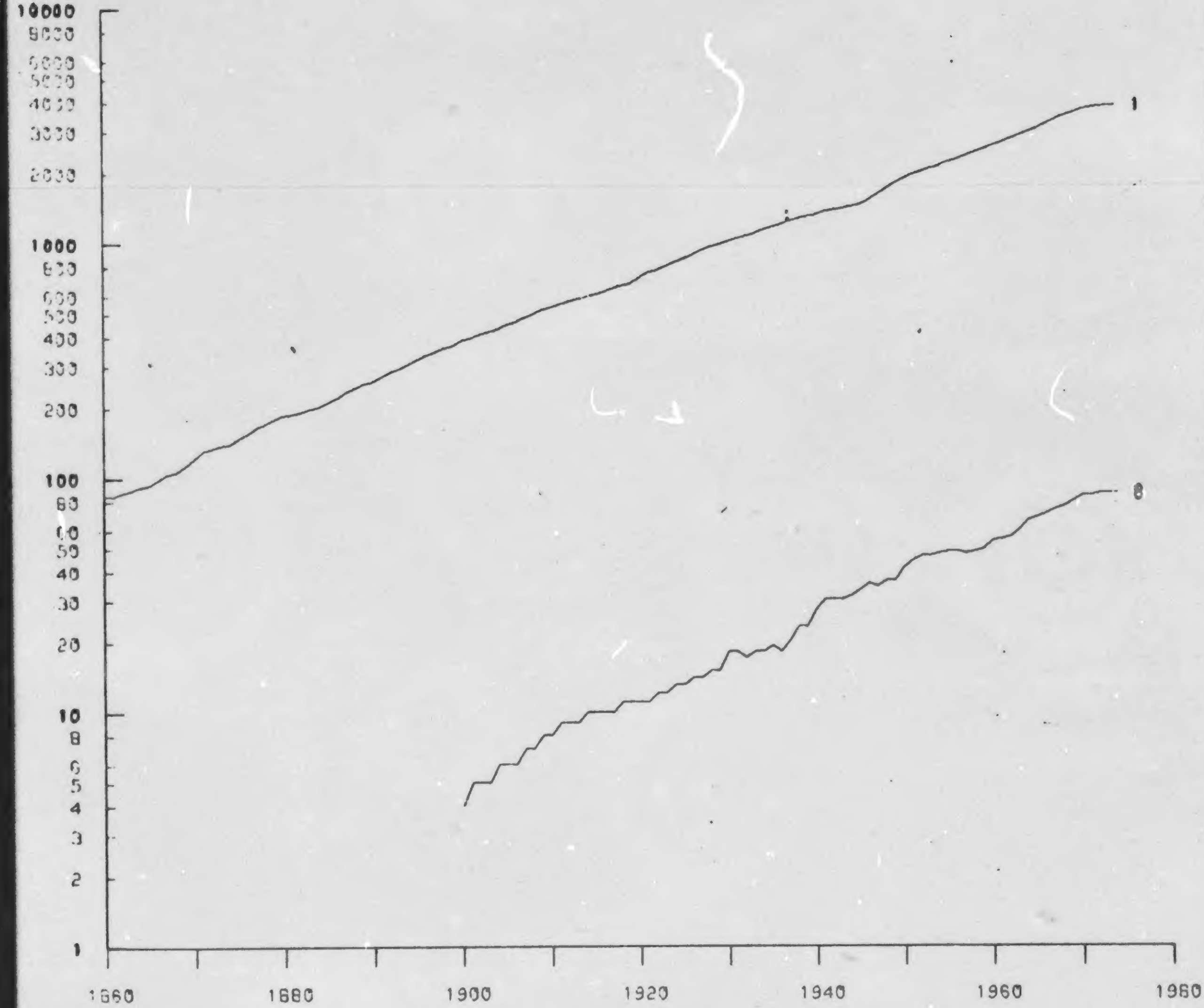


Figure 3(h)

Growth curve for monograph series (8),
1900-1970
Source: CLOSSS

Figure 4

Growth curves for serials by country of publication

Key to graphs

1 Time analysis for all serials
2 Time analysis for serials published in United Kingdom
3 Time analysis for serials published in United States
4 Time analysis for serials published in France
5 Time analysis for serials published in Federal Germany
6 Time analysis for serials published in Belgium
7 Time analysis for serials published in Italy
8 Time analysis for serials published in Netherlands
9 Time analysis for serials published in Swtizerland
10 Time analysis for serials published in Canada
11 Time analysis for serials published in India
12 Time analysis for serials published in Australia
13 Time analysis for serials published in Eastern Europe

Figure 4

Growth curves for serials by country of production

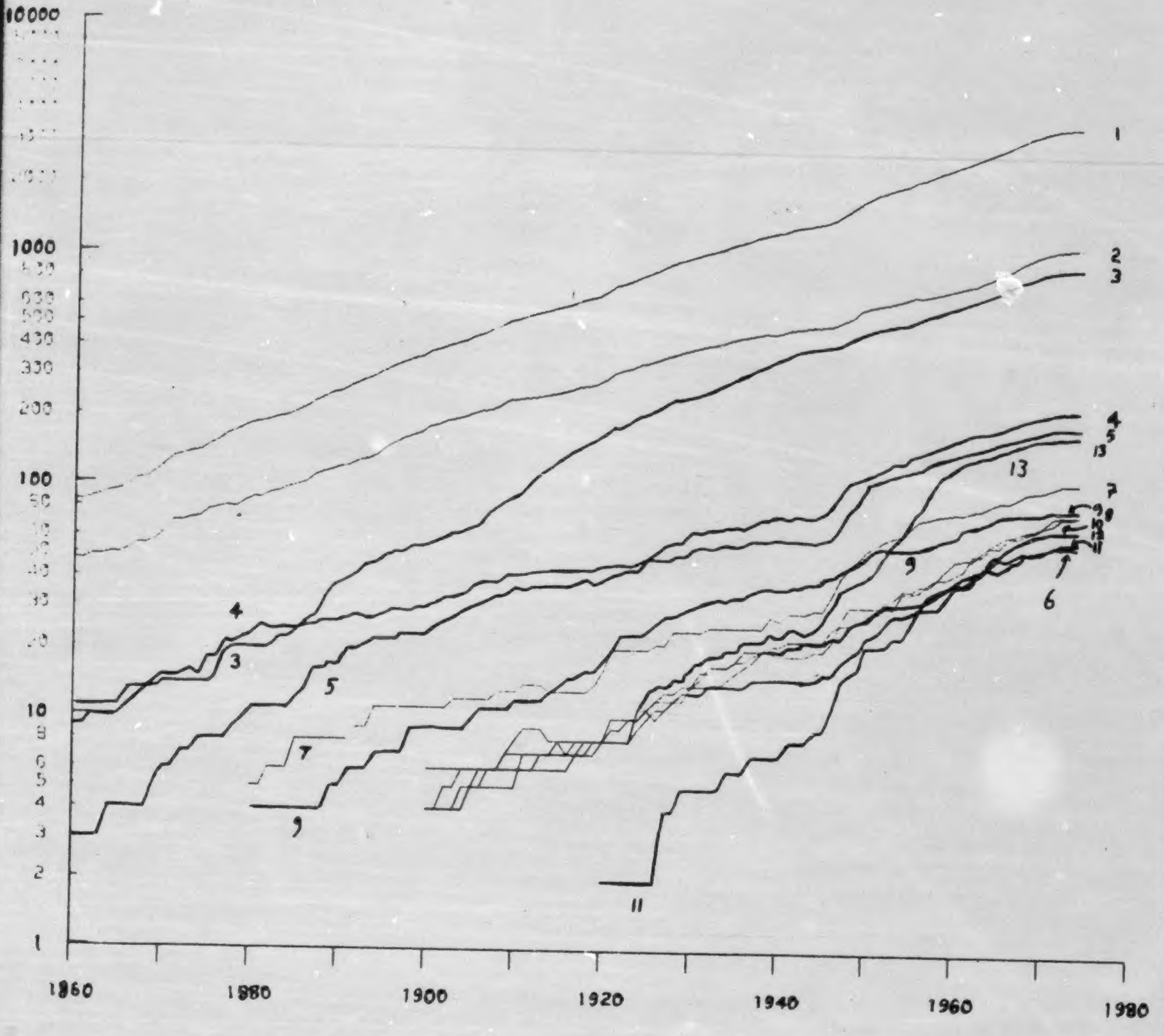
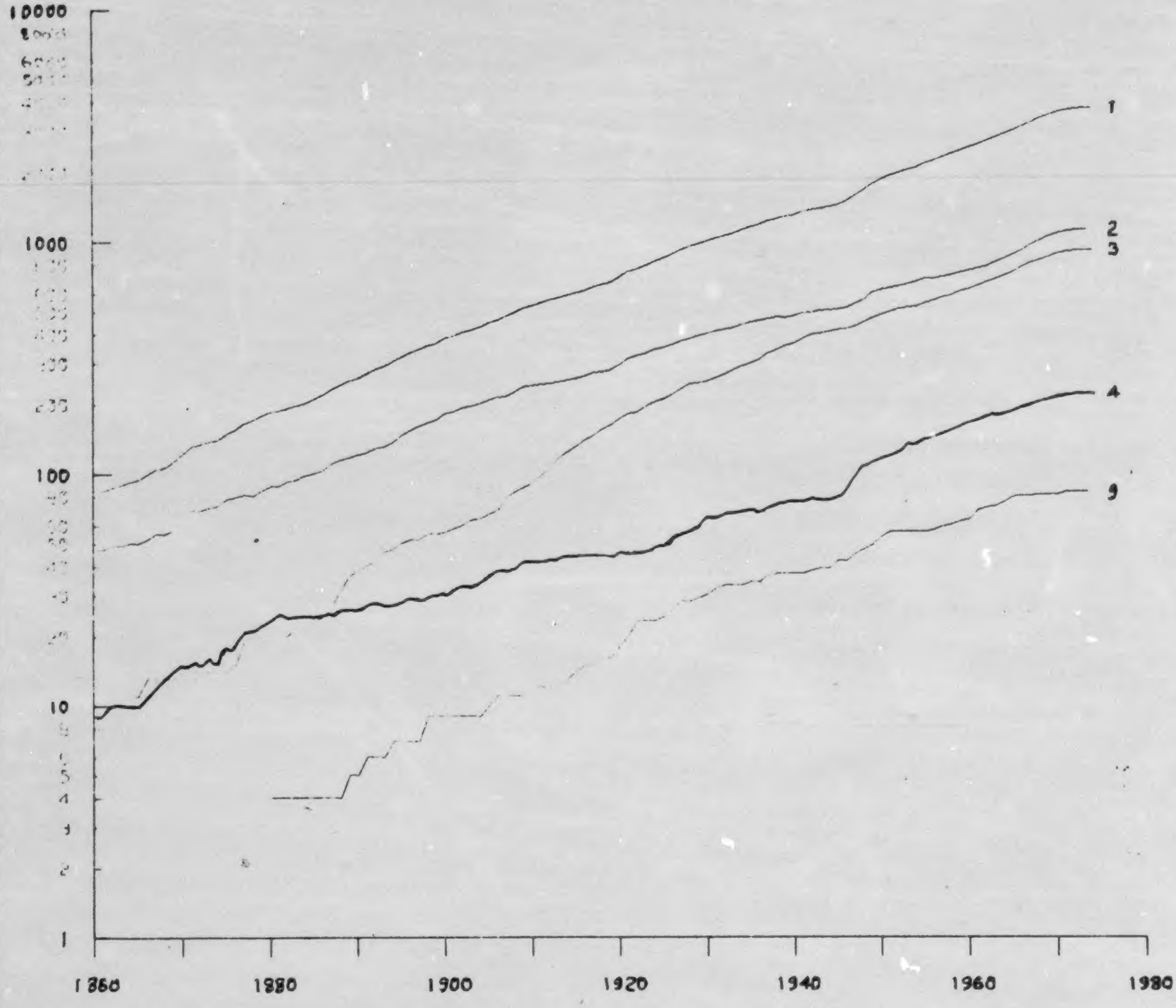


Figure 5

Growth curves for serials by country of publication

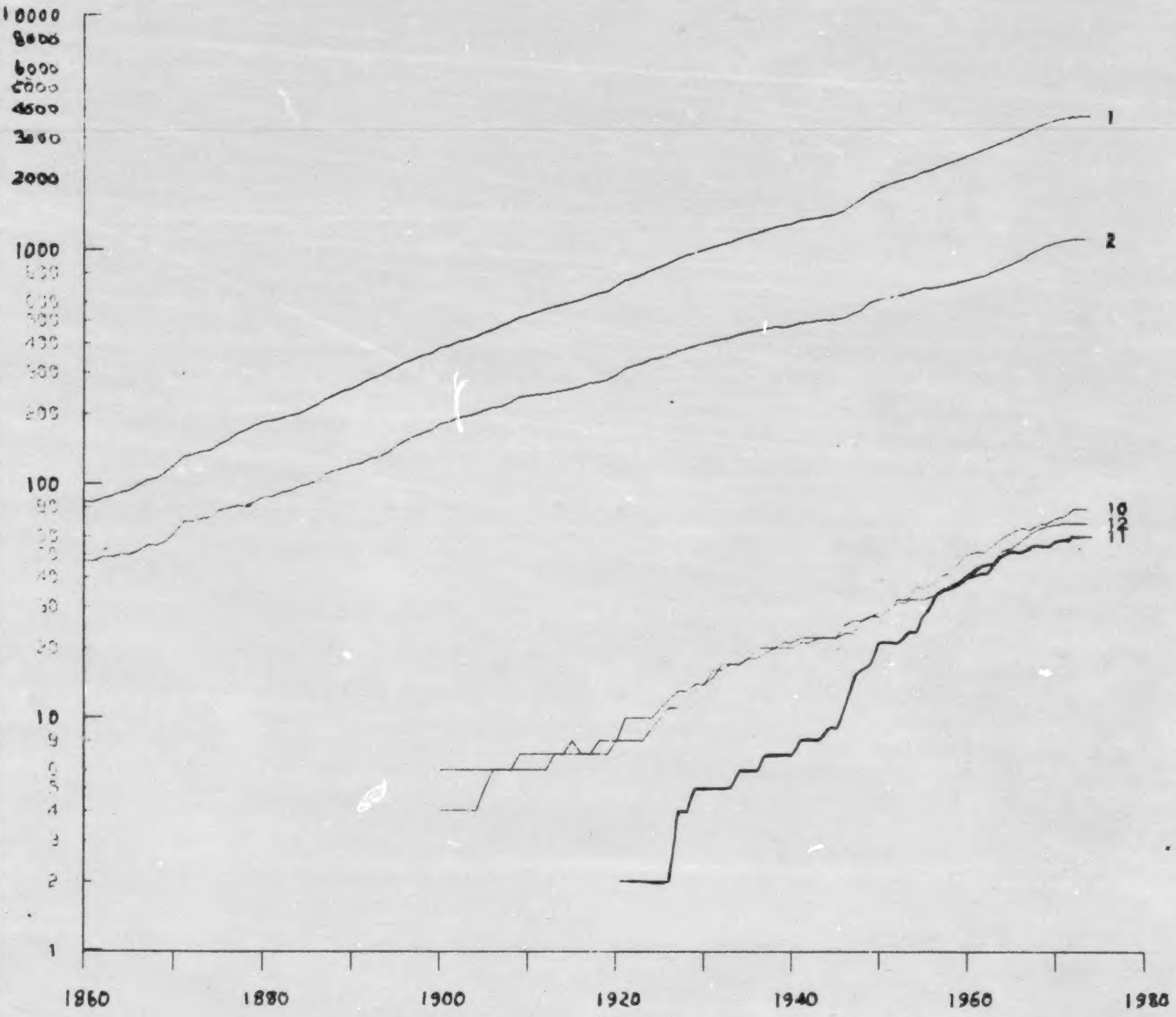


Key to graphs

1 Time analysis for all serials
2 Time analysis for serials published in United Kingdom
4 Time analysis for serials published in United States
9 Time analysis for serials published in Switzerland

Figure 6

Growth curves for serials by country of publication

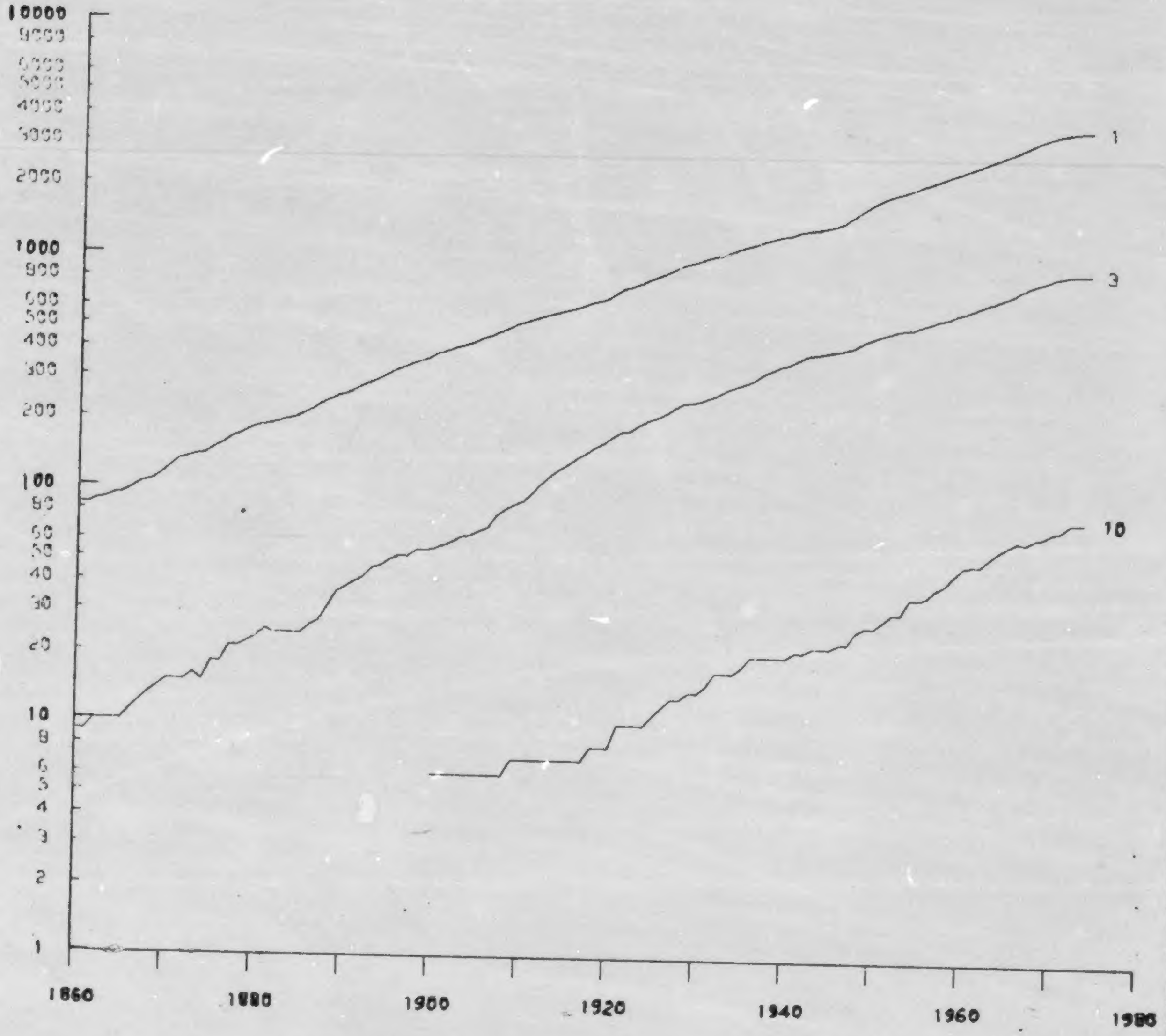


Key to graphs

1 Time analysis for all serials
2 Time analysis for serials published in United Kingdom
10 Time analysis for serials published in Canada
11 Time analysis for serials published in India
12 Time analysis for serials published in Australia

Figure 7

Growth curves for serials by country of publication

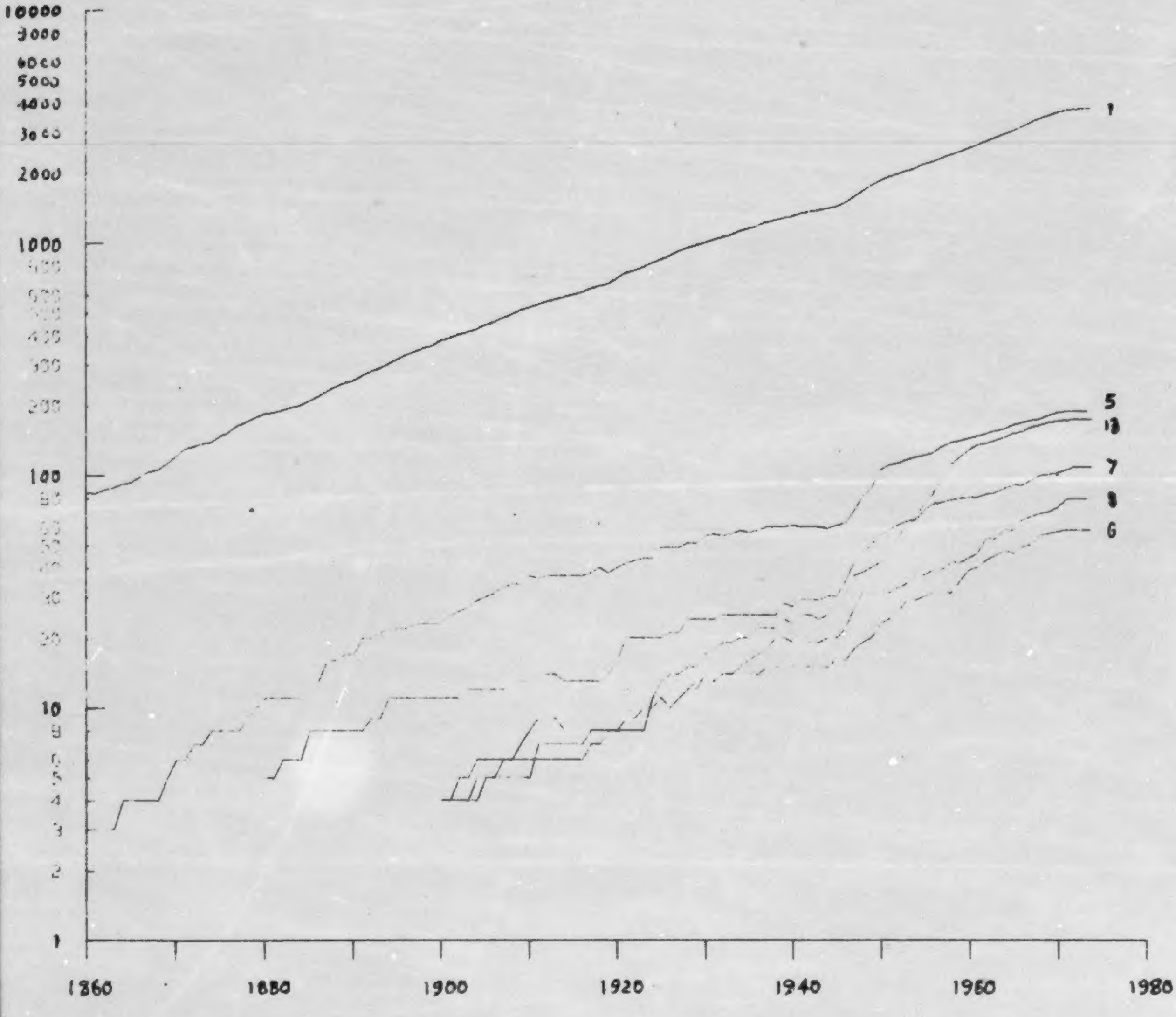


Key to graphs

1	Time analysis for all serials
3	Time analysis for serials published in United States
10	Time analysis for serials published in Canada

Figure 8

Growth curves for serials by country of publication

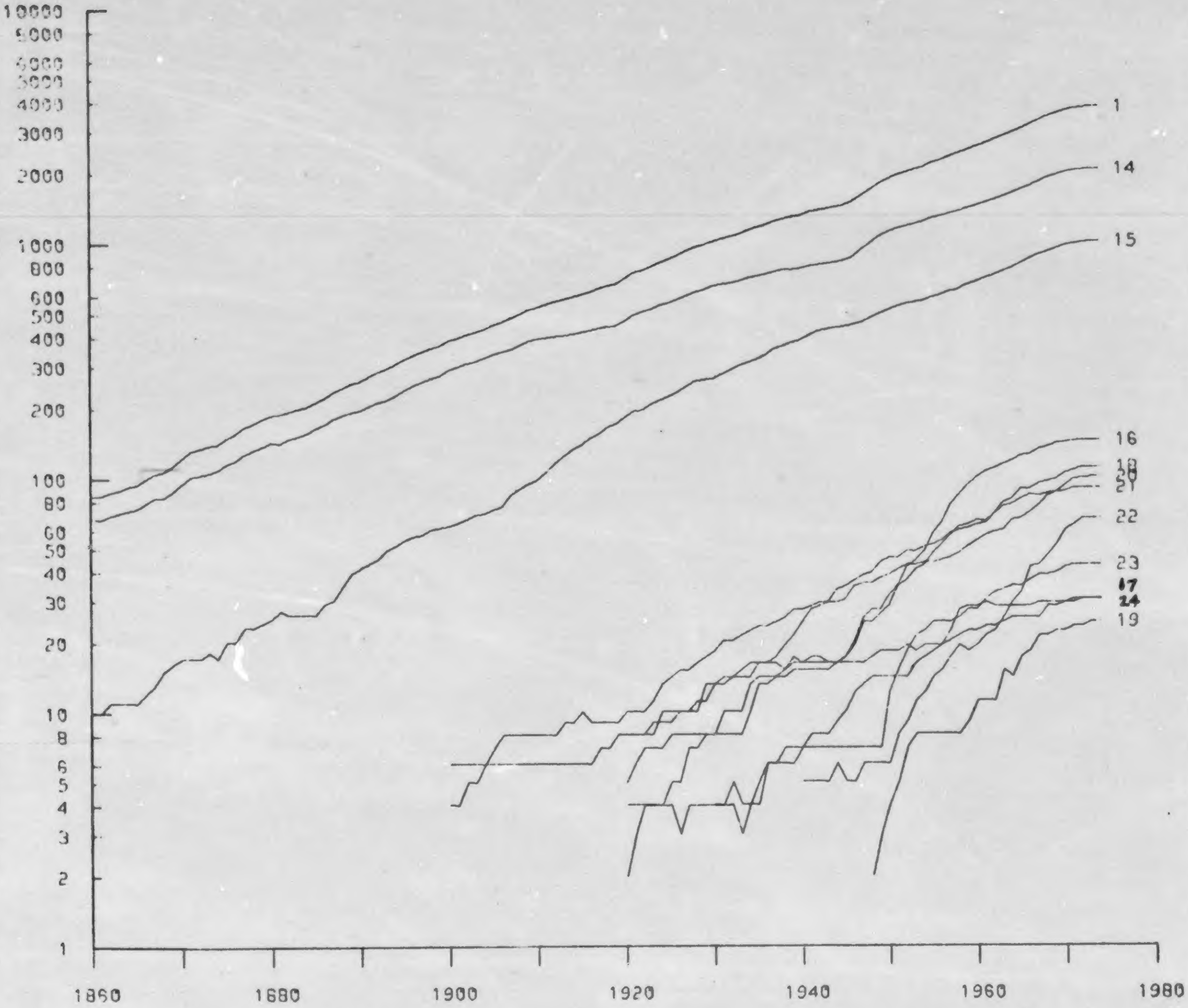


Key to graphs

1	Time analysis for all serials
5	Time analysis for serials published in Federal Germany
6	Time analysis for serials published in Belgium
7	Time analysis for serials published in Italy
8	Time analysis for serials published in Netherlands
13	Time analysis for serials published in Eastern Europe

Figure 9

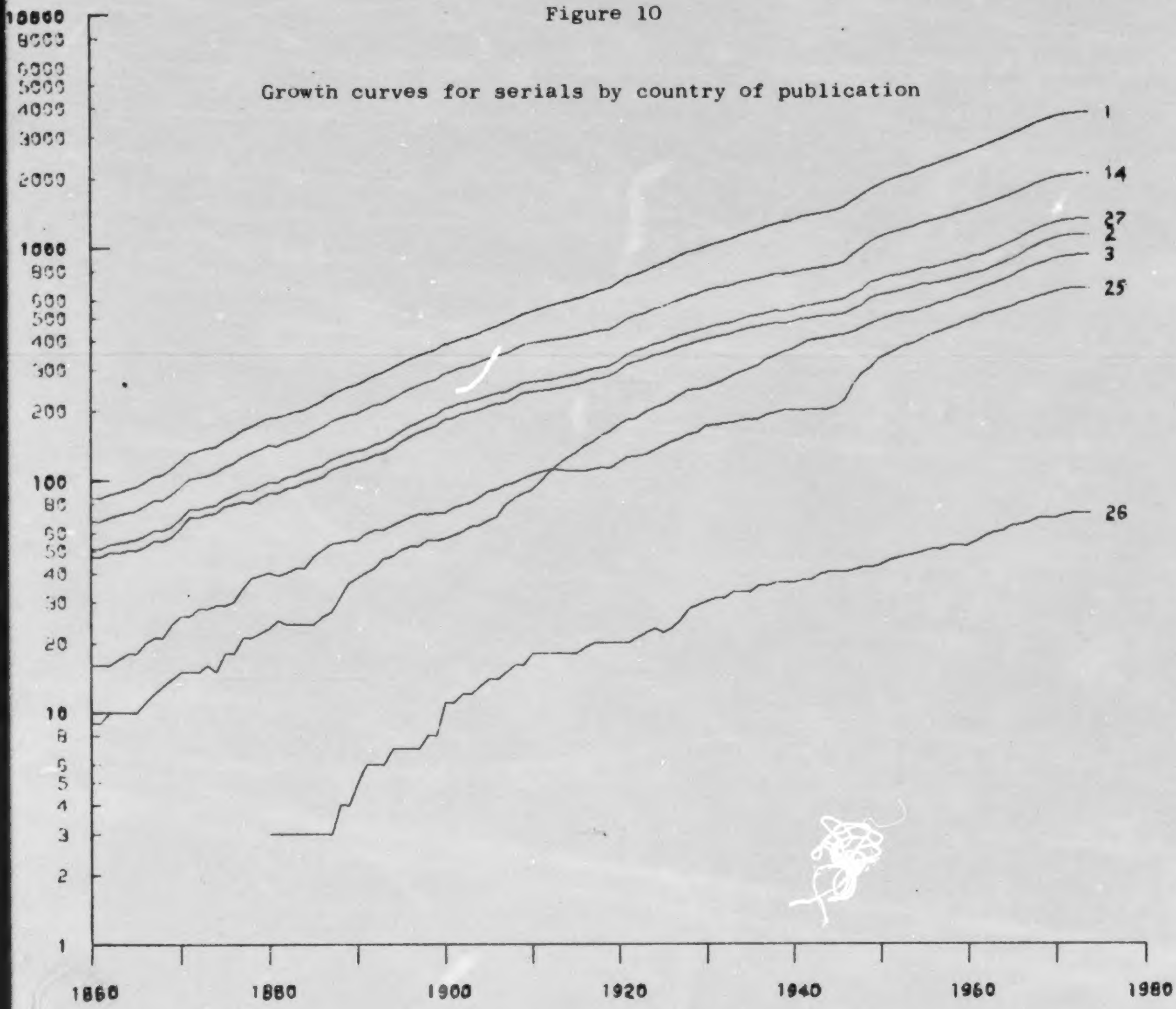
Growth curves for serials by country of publication



Key to graphs

1 Time analysis for all serials
14 Time analysis for serials published in Western Europe
15 Time analysis for serials published in North America
16 Time analysis for serials published in Eastern Europe
17 Time analysis for serials published in Russia
18 Time analysis for serials published in Asia
19 Time analysis for serials published in Arab Countries
20 Time analysis for serials published in Central and South Asia
21 Time analysis for serials published in Oceania
22 Time analysis for serials published in Black Africa
23 Time analysis for serials published in Japan
24 Time analysis for serials published in Southern Africa

Figure 10



Key to graphs

1	Time analysis for all serials
2	Time analysis for serials published in United Kingdom
3	Time analysis for serials published in United States
14	Time analysis for serials published in Western Europe
25	Time analysis for serials published in the EEC (6 countries)
26	Time analysis for serials published in Scandinavia
27	Time analysis for serials published in the rest of Western Europe (= 14 - (25 + 26))

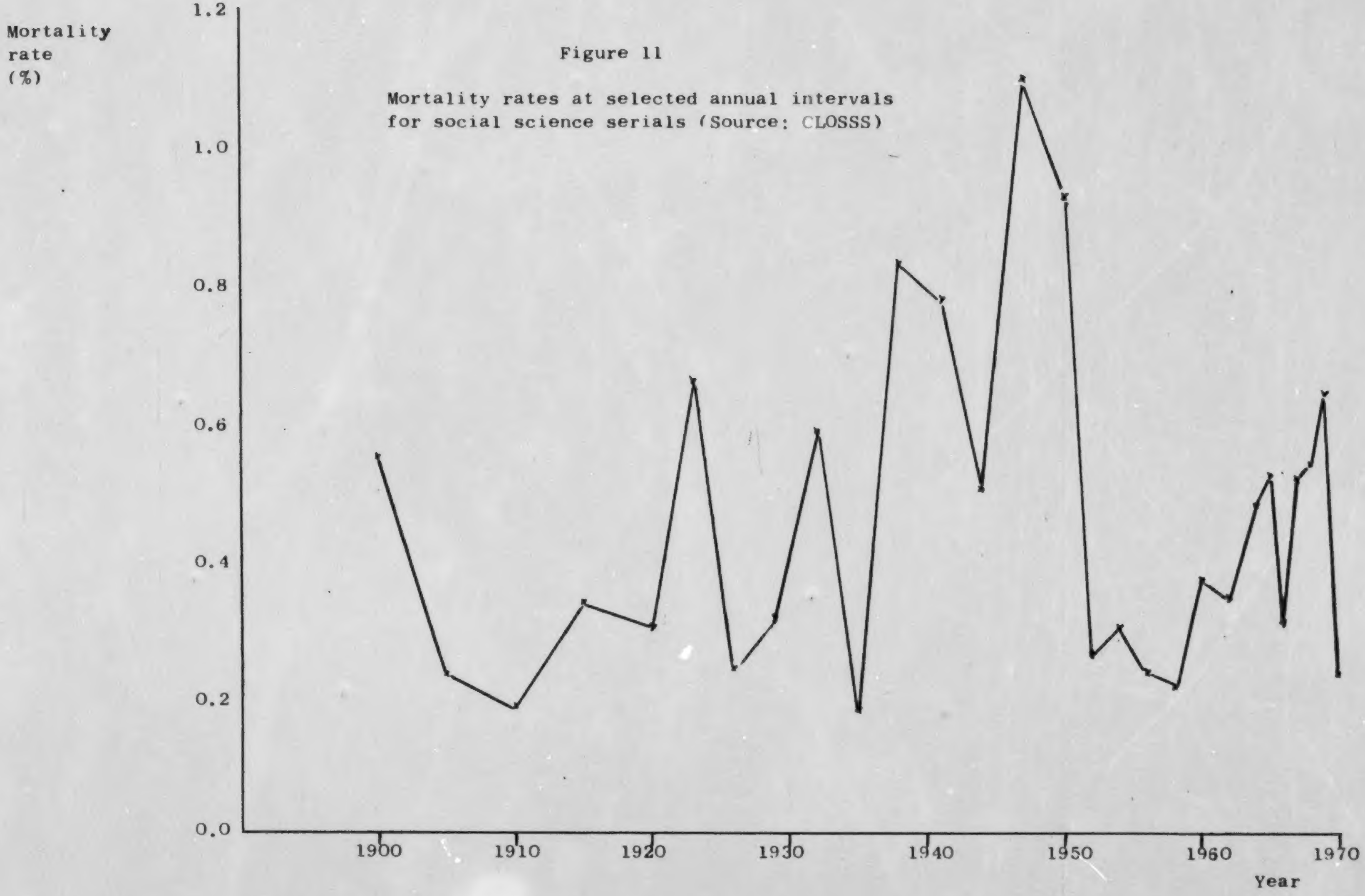


Figure 11

Mortality rates at selected annual intervals for social science serials (Source: CLOSSS)

Figure 12

Growth in number of current secondary service serials in the social sciences, 1900-1968

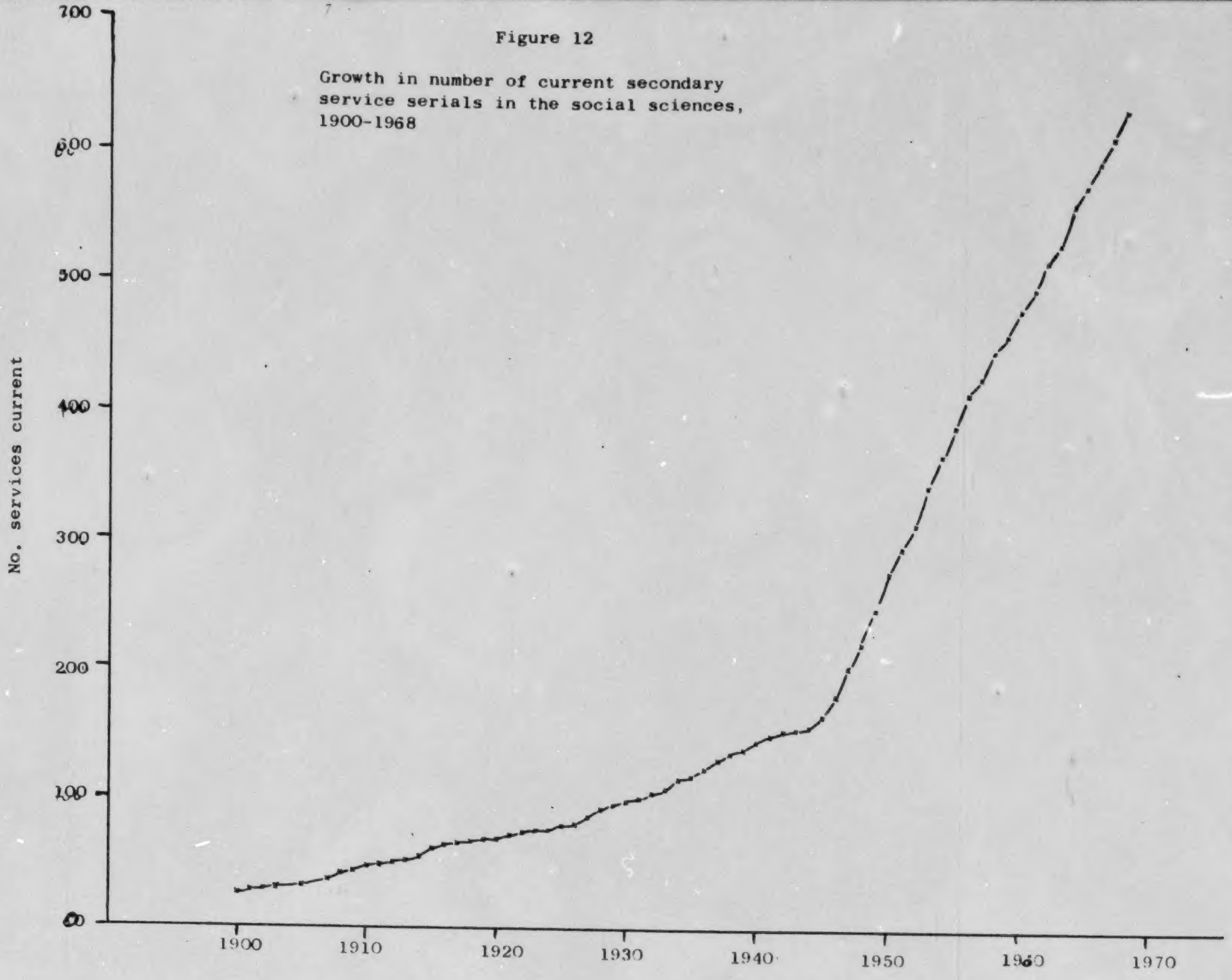
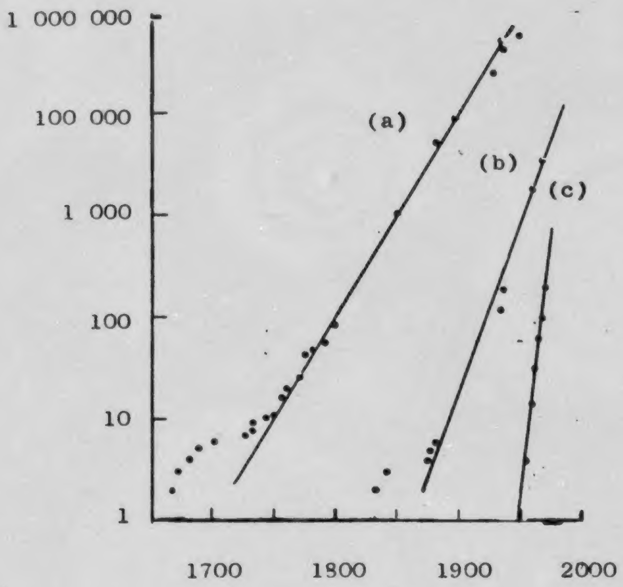


Figure 13

Growth in production of scientific papers, abstracts, and computer indexes, 1665-1970



(a) Scientific papers

(b) Abstracts journals

(c) Computer indexes

Source: After Menard (1971) and Price (1963)

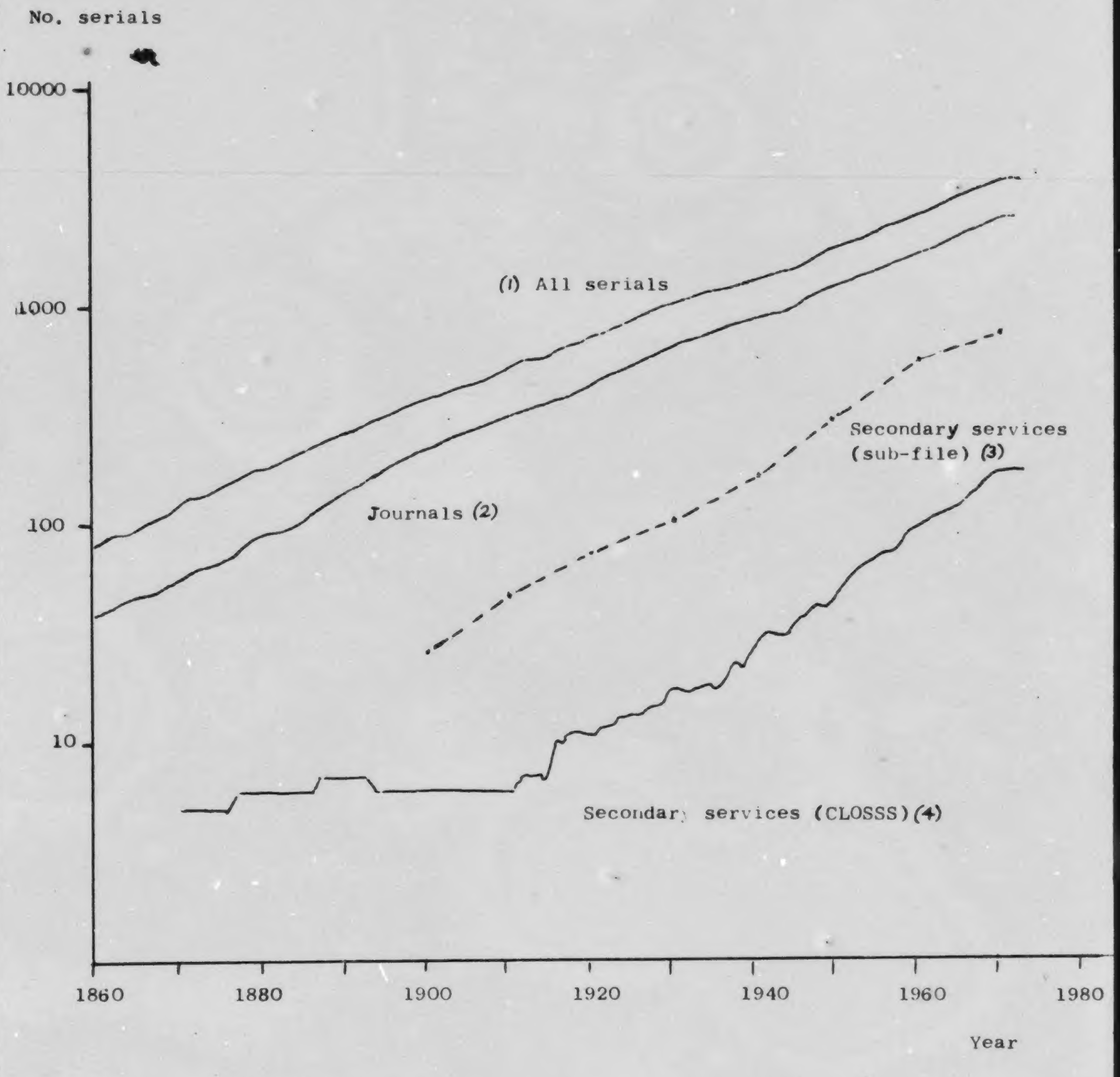
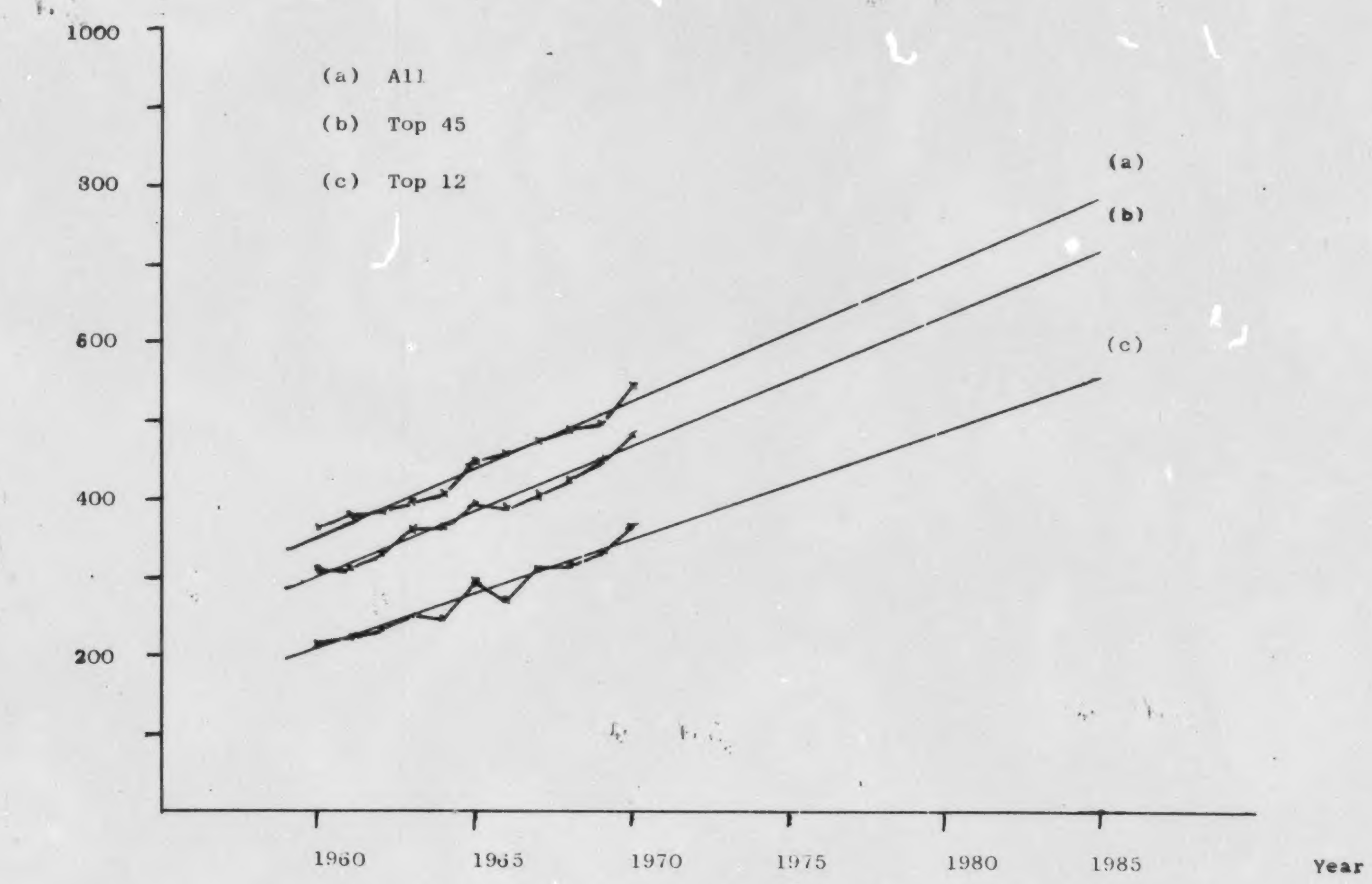


Figure 14

Comparison of growth curves for social science serials and secondary serials relating to the social sciences

Figure 16

World book production 1961-1970: All, top 45 and top 12 producers.



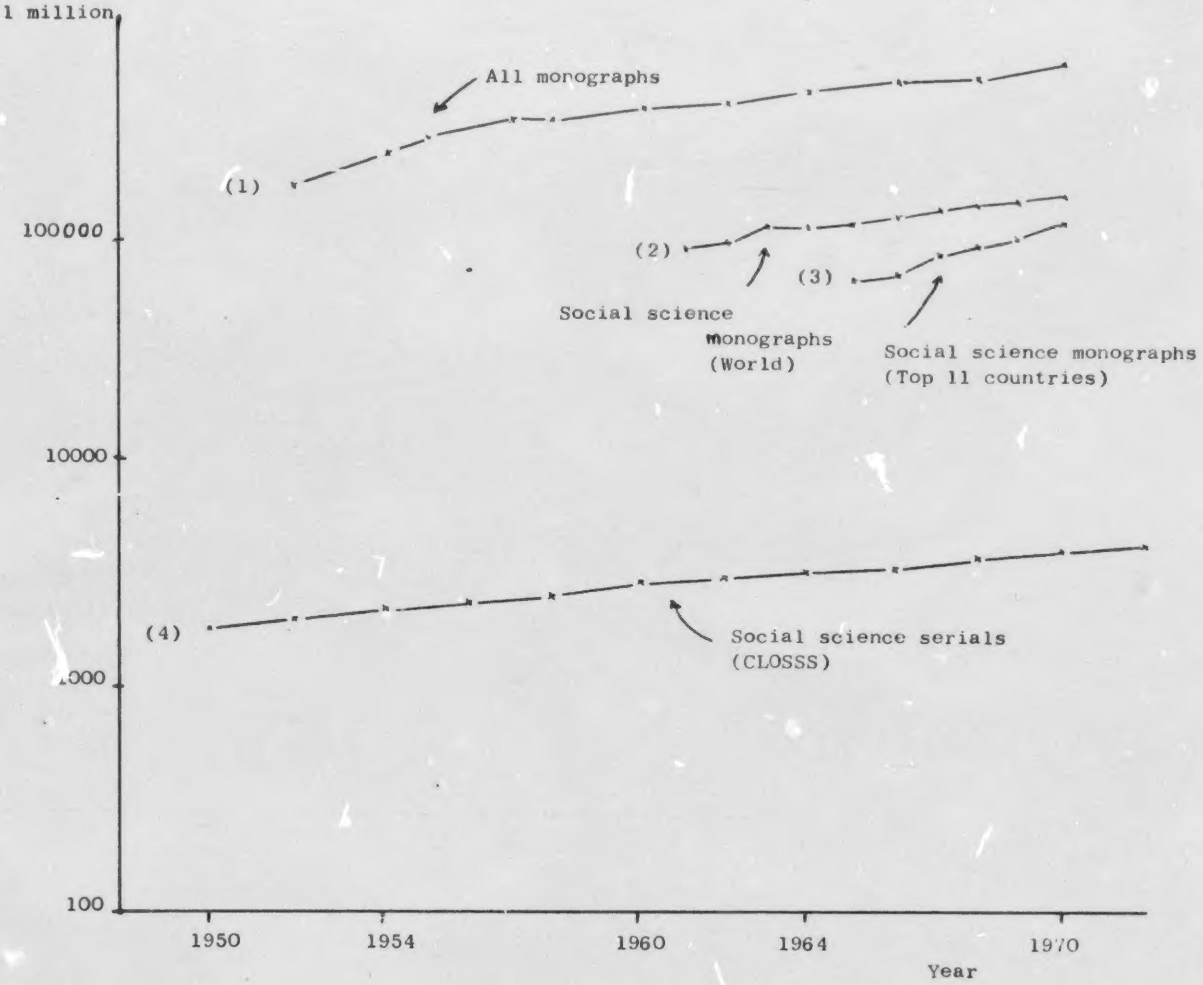


Figure 15

Comparison of growth curves for social science serials, social science monographs, and all monographs

Figure 17

World 'functional' book production 1961-1970; All, top 45 and top 12 producers.

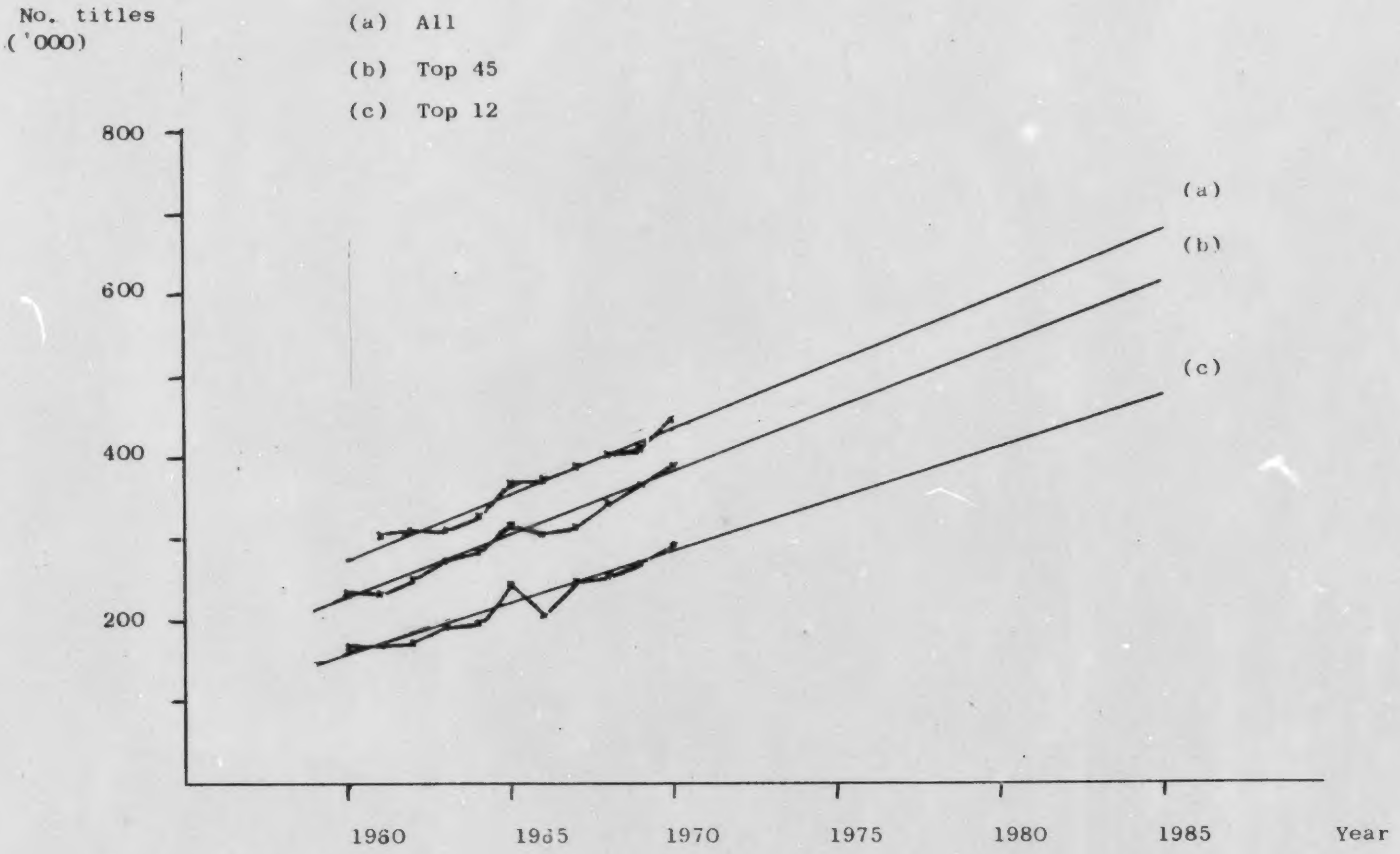
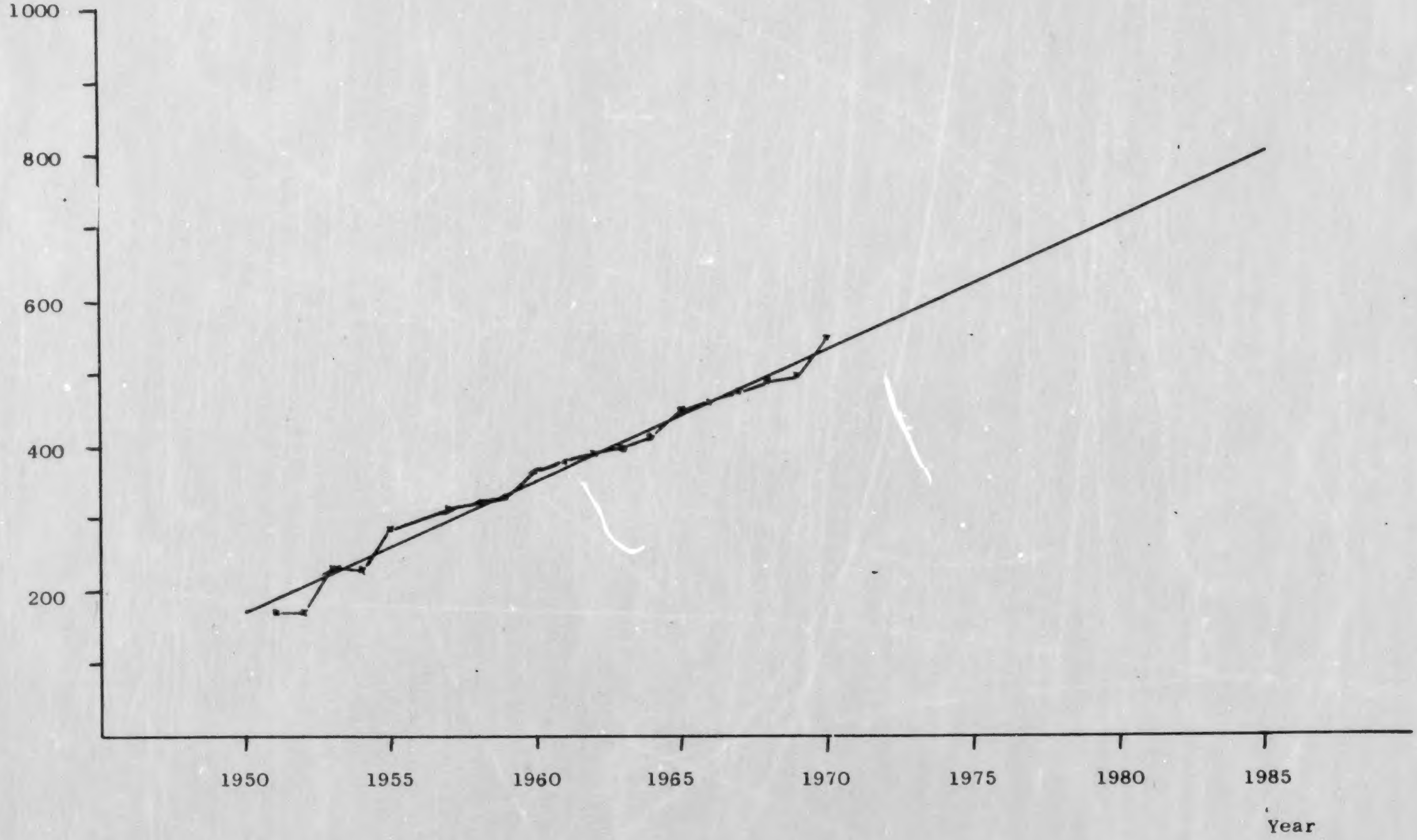


Figure 18

World book production 1951-1970.



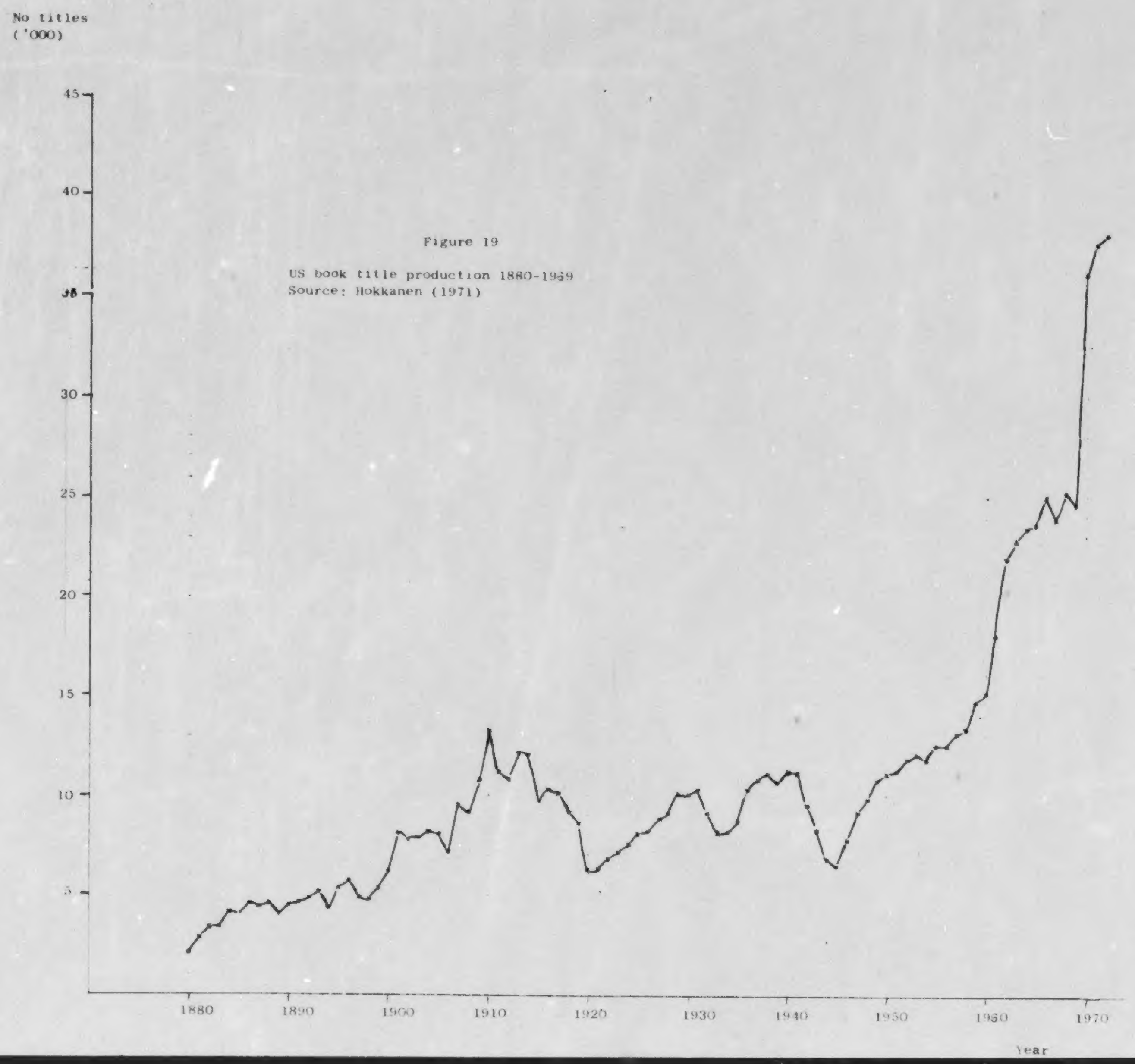


Figure 19

US book title production 1880-1969
Source: Hokkanen (1971)

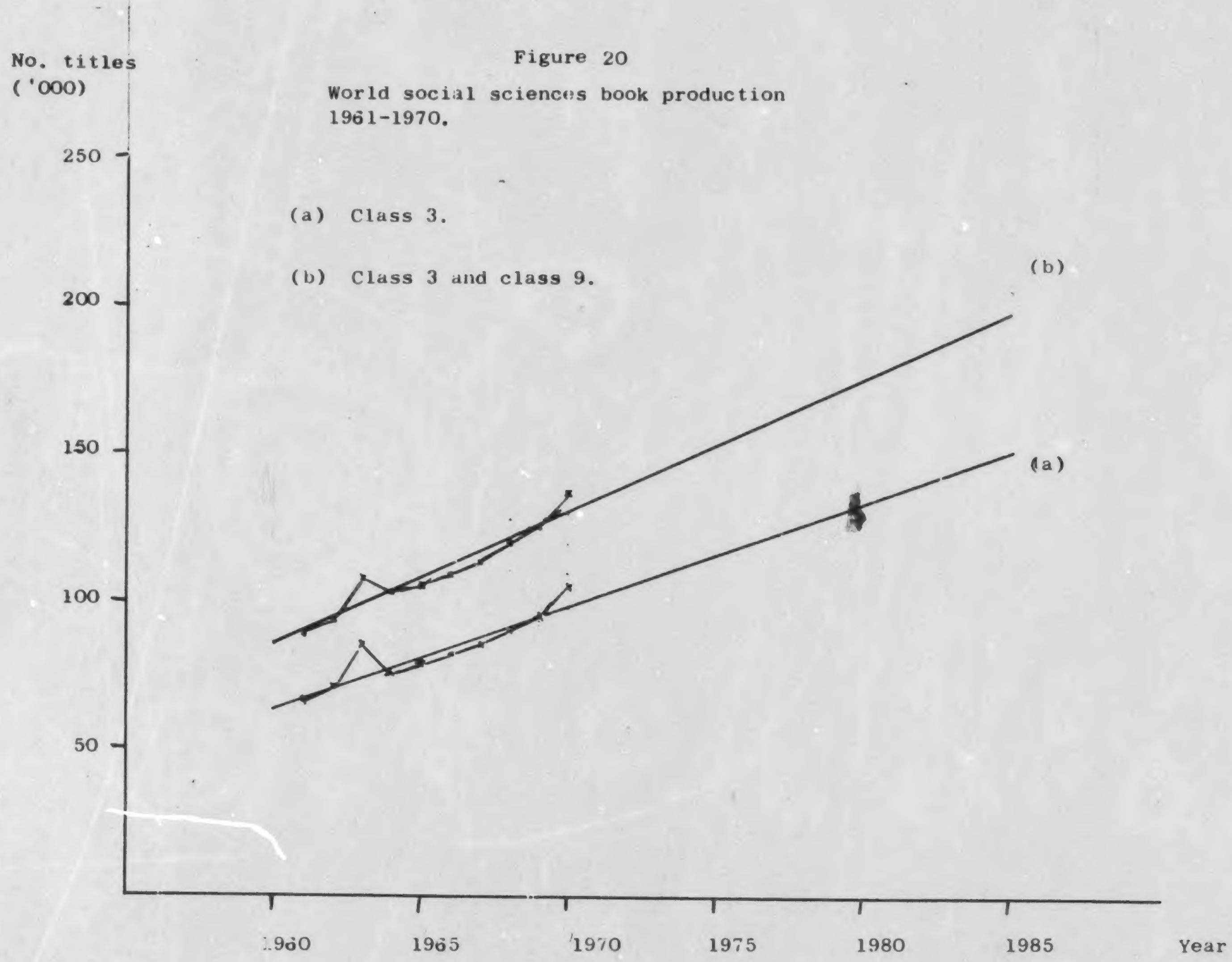


Figure 20

World social sciences book production 1961-1970.

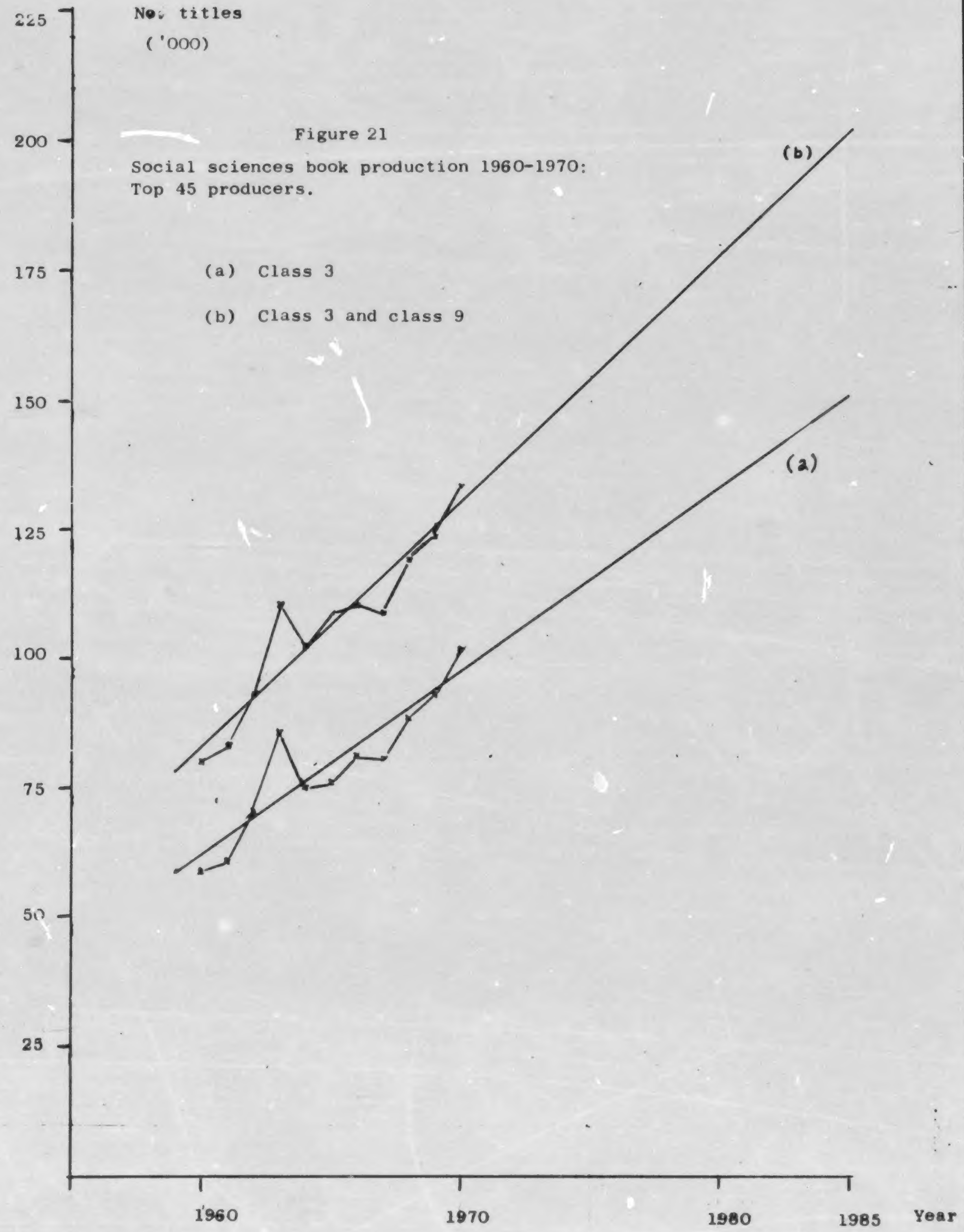
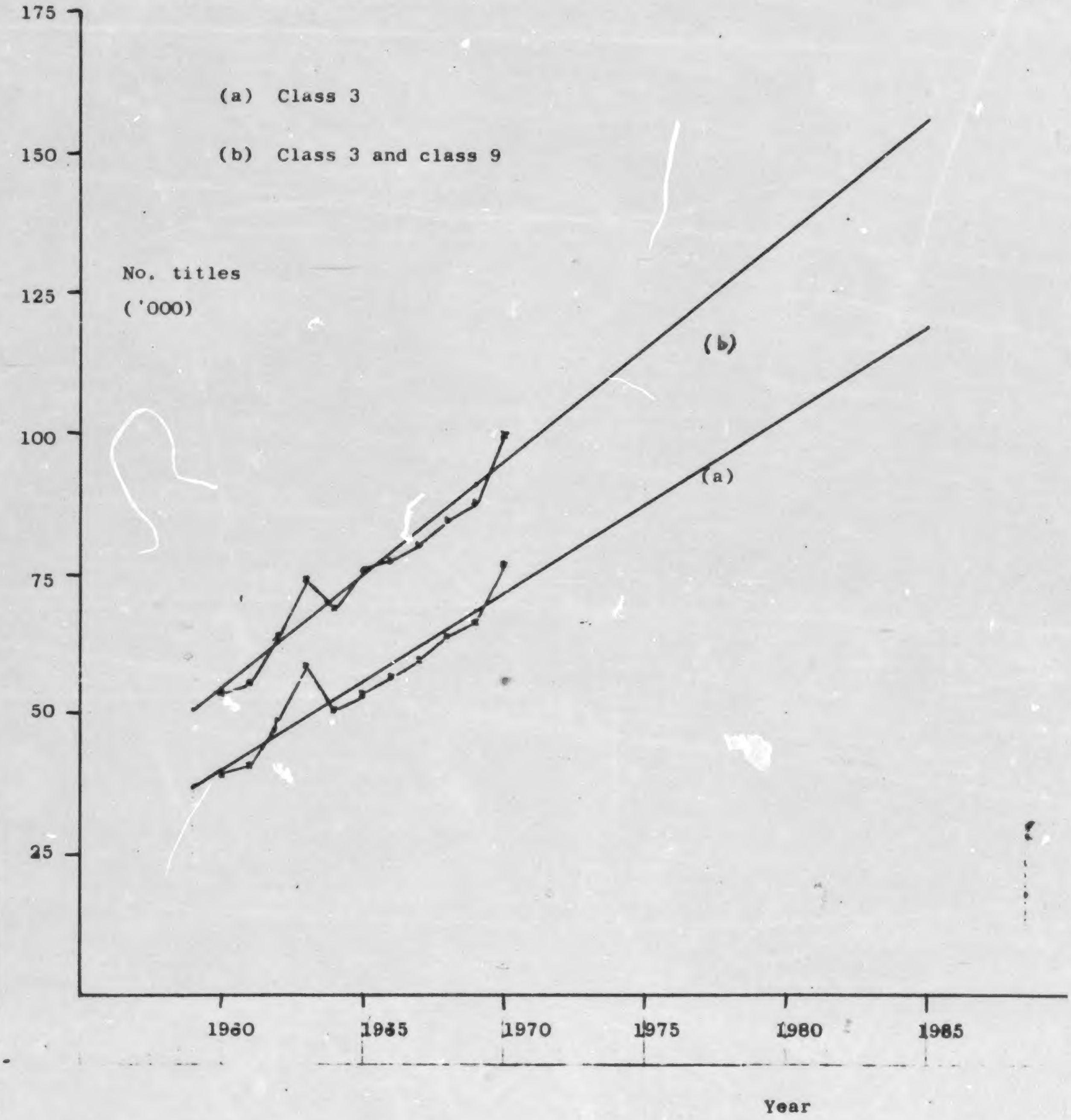


Figure 21

Social sciences book production 1960-1970: Top 45 producers.

Figure 22

Social sciences book production 1960-1970:
Top 12 producers.



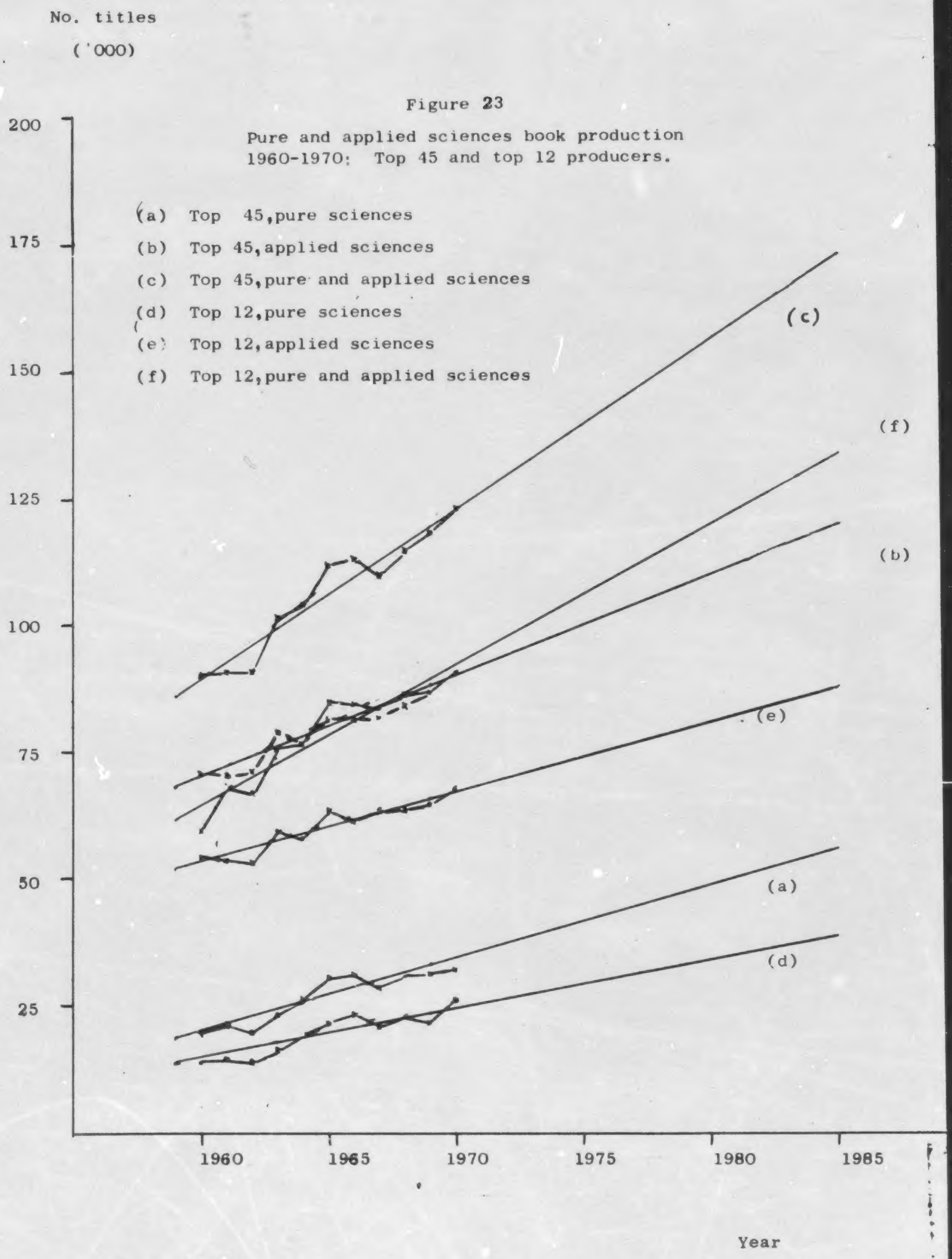


Figure 23

Pure and applied sciences book production 1960-1970: Top 45 and top 12 producers.

The data collection has led to an anomaly at the world and top 45 level for the years 1962, 1965 and 1966 for classes 1, 2, 8 and 9, and 1962, and 1966 for classes 1, 2 and 8. The row total of subject data in Tables 4 and 6 for these combinations of years and classes produces a greater total for the top 45, than for world production. This is logically inconsistent, but arises from unavoidably having had to use different annual volumes of the UN and UNESCO statistics to derive a composite total for world and top 45 production; this has led to differences in the total number of countries sampled at the world level (see Table 4A) and the actual countries sampled.

The error in size is no more than 3%, has no effect on the growth trend, is hardly enough to justify further refinement of the data, and acceptable in view of the great difficulty anyway in identifying the humanities literature.

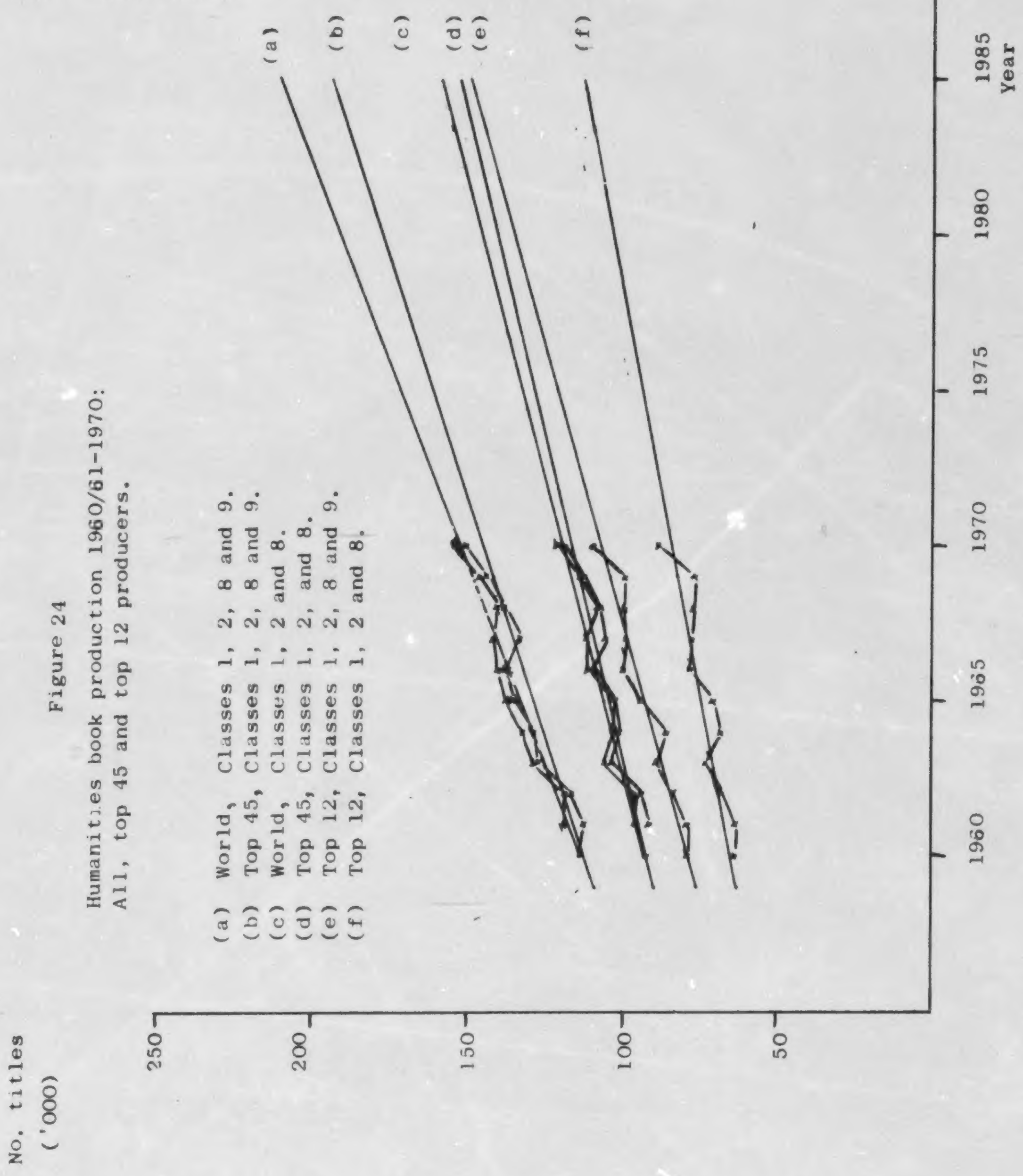


Figure 24

Humanities book production 1960/61-1970:
All, top 45 and top 12 producers.

(a) World, Classes 1, 2, 8 and 9.
(b) Top 45, Classes 1, 2, 8 and 9.
(c) World, Classes 1, 2 and 8.
(d) Top 45, Classes 1, 2, and 8.
(e) Top 12, Classes 1, 2, 8 and 9.
(f) Top 12, Classes 1, 2 and 8.

Figure 25

World social sciences book production
1965-1970.

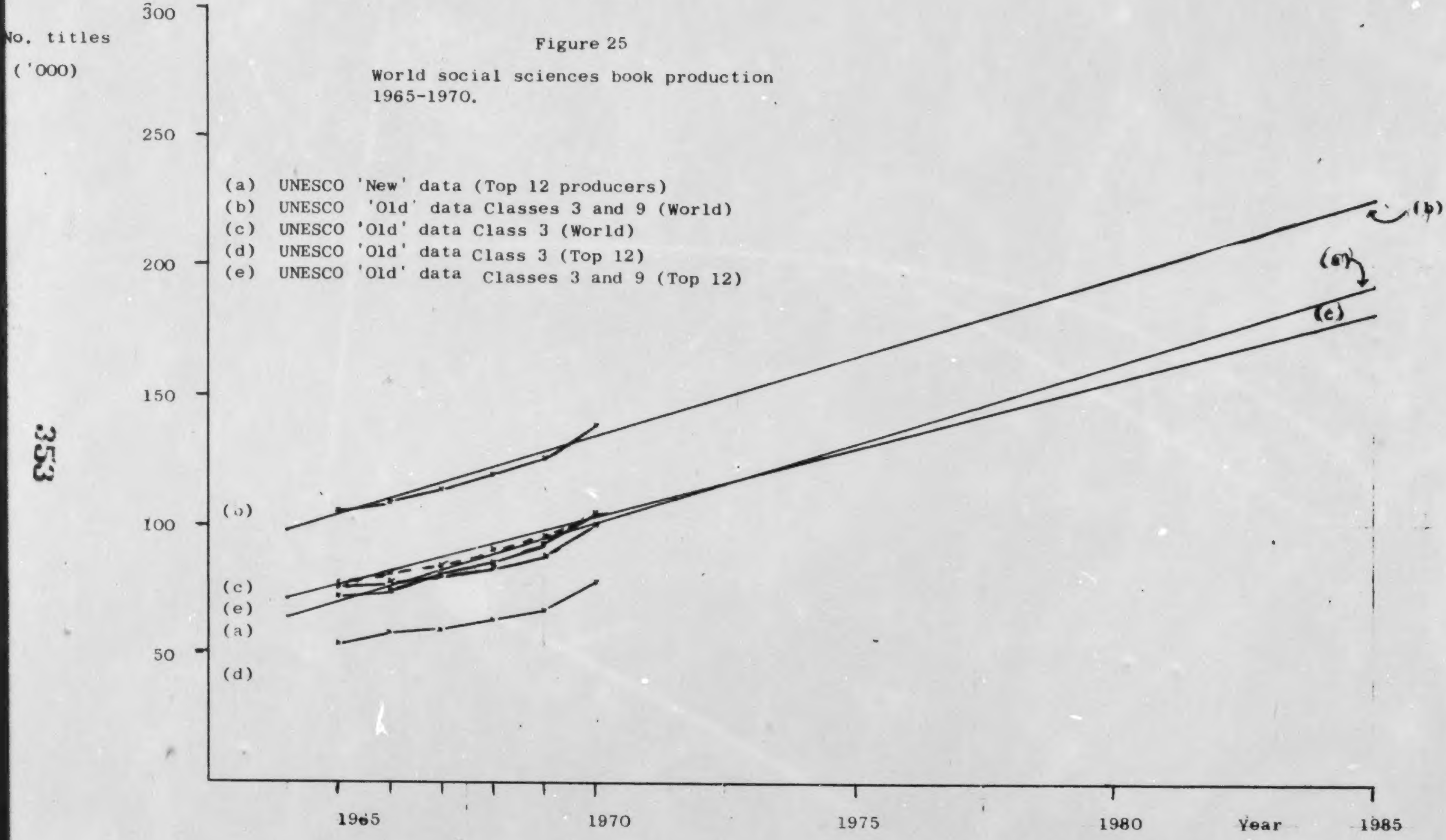
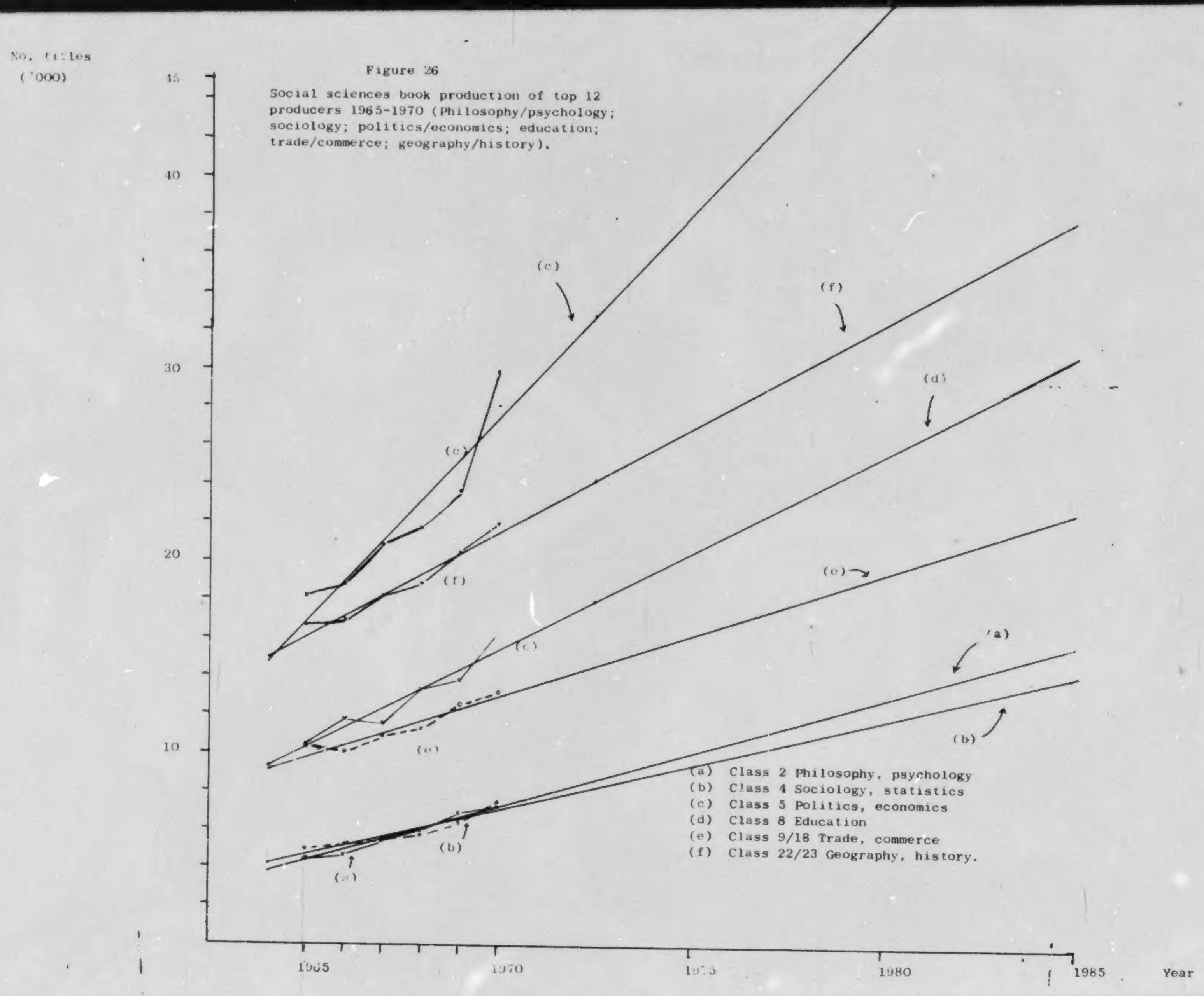


Figure 26

Social sciences book production of top 12 producers 1965-1970 (Philosophy/psychology; sociology; politics/economics; education; trade/commerce; geography/history).



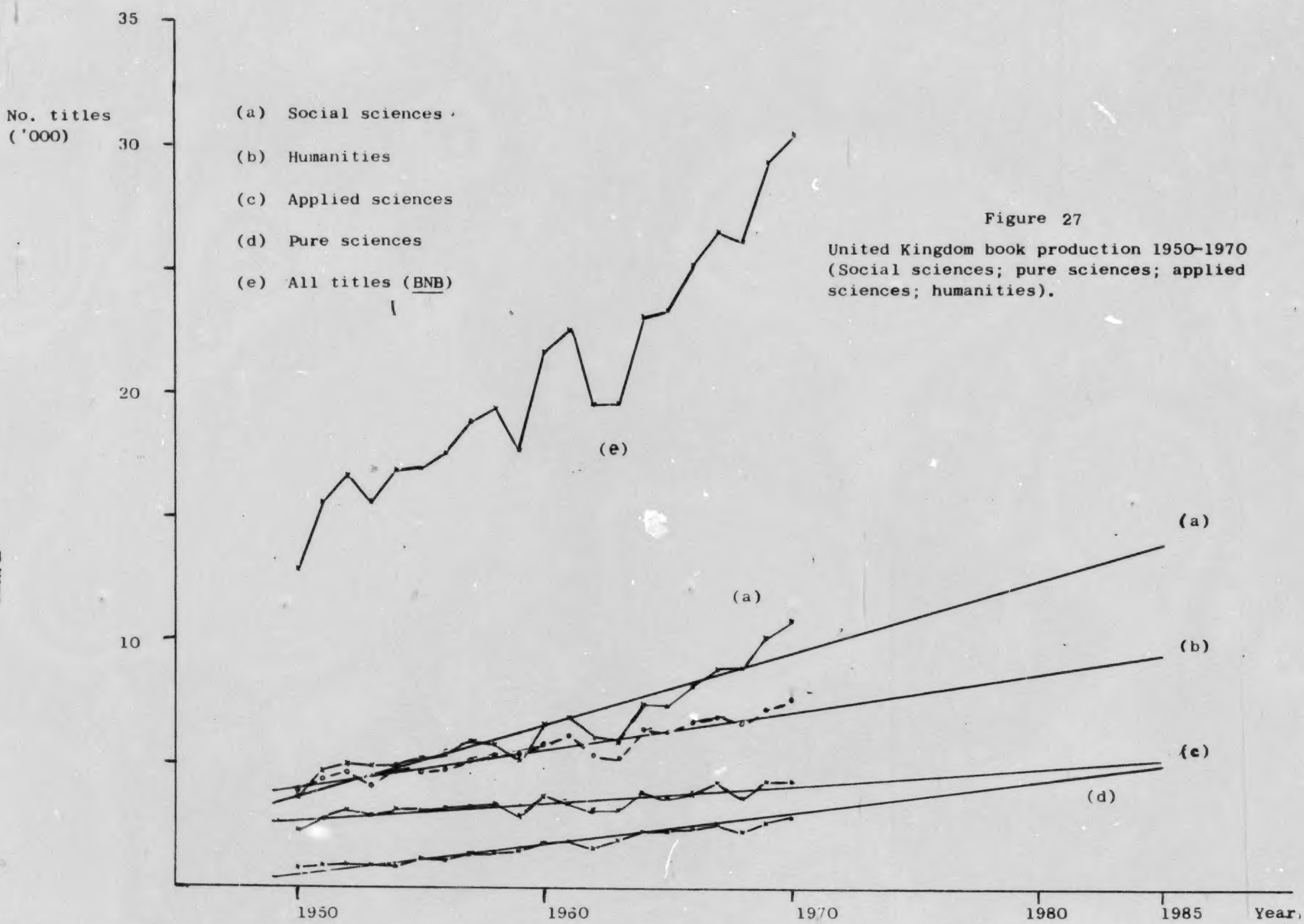


Figure 27

United Kingdom book production 1950-1970 (Social sciences; pure sciences; applied sciences; humanities).

Figure 28

United States book production 1954-1970
(Social sciences; pure sciences; applied
sciences; humanities).

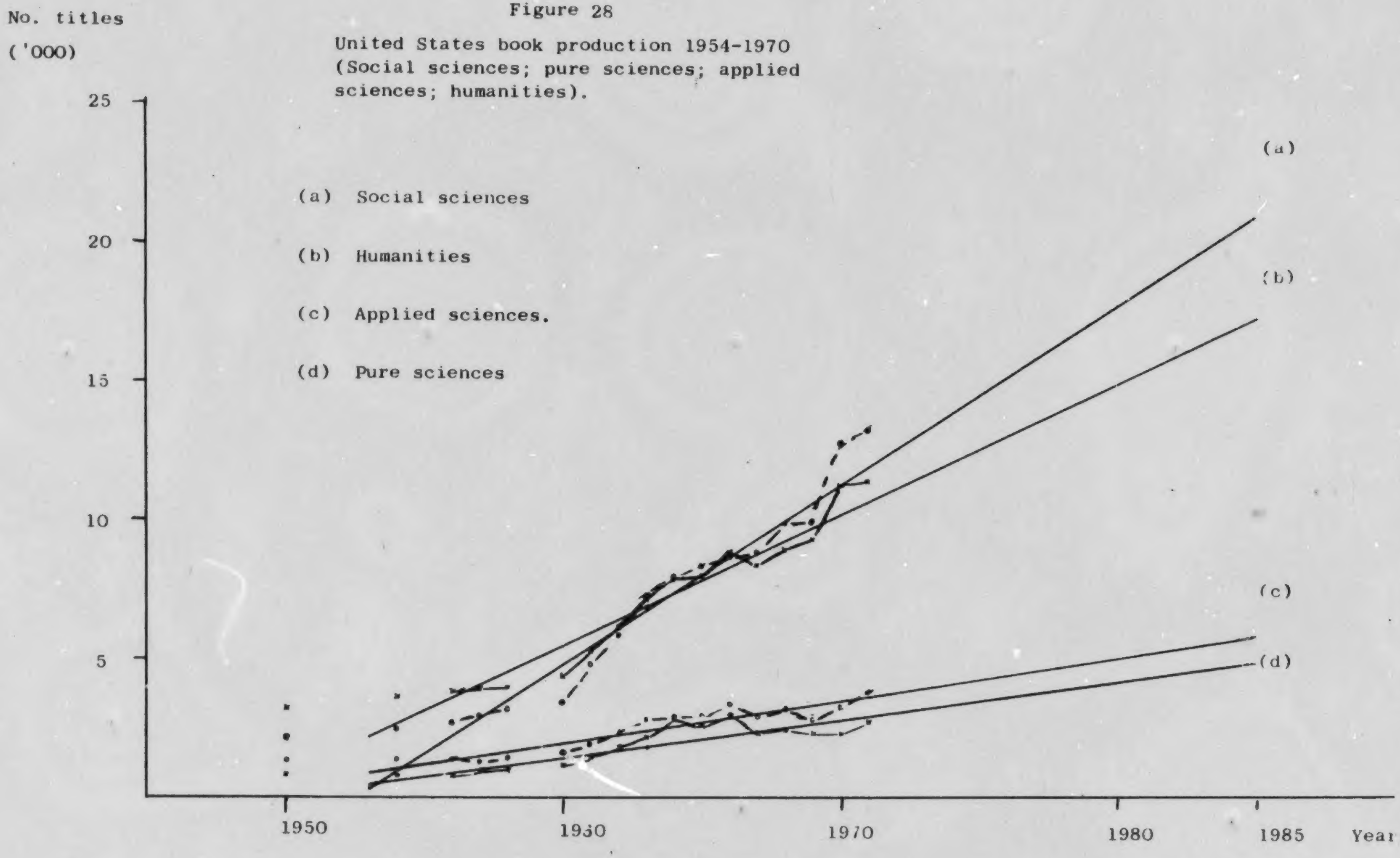


Figure 29

Growth of the Aslib Commonwealth Index of Unpublished Scientific Translations, 1952-1970

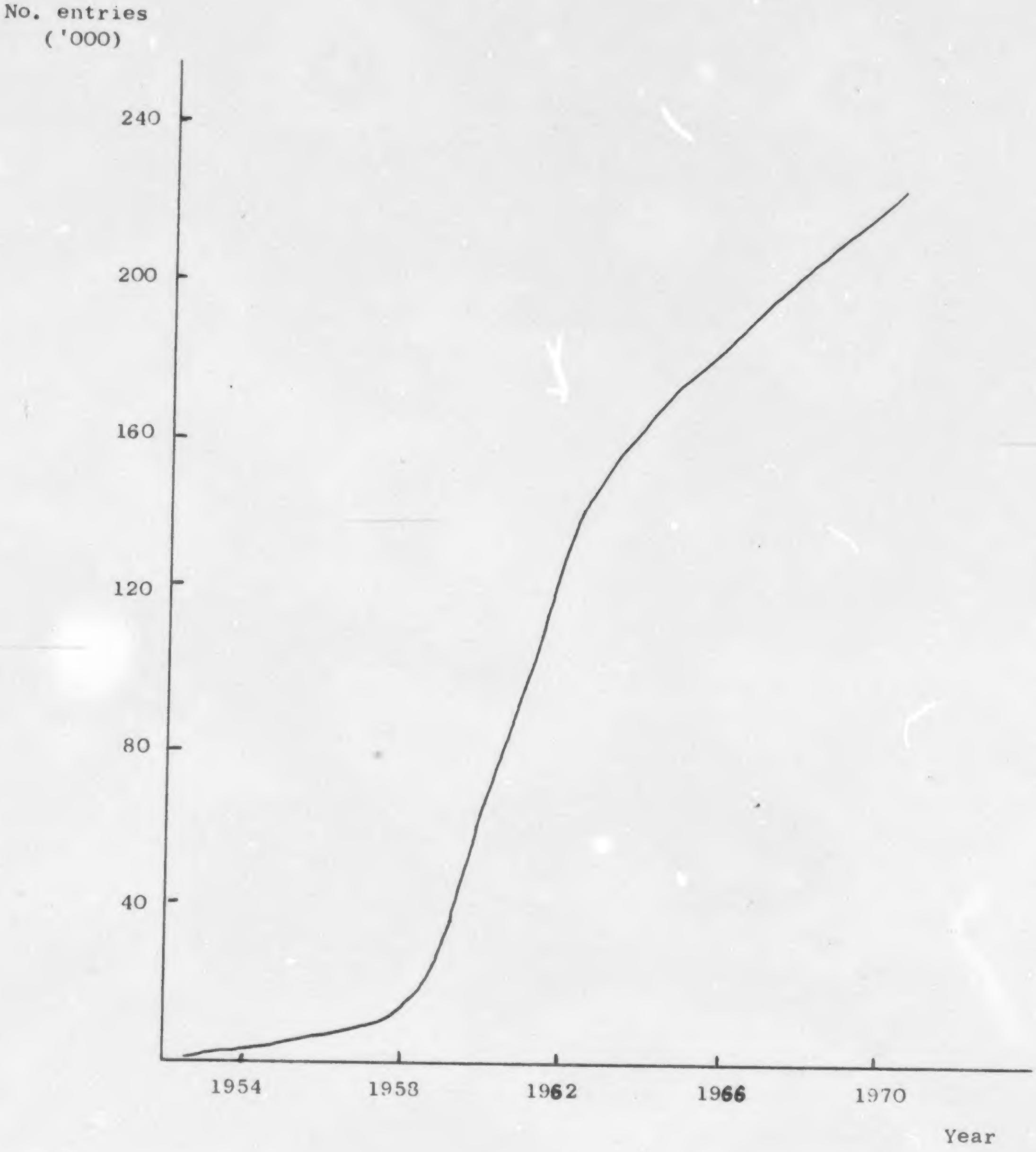


Figure 30(a)

Average size of social science journals
1935-1972. All titles: length and articles

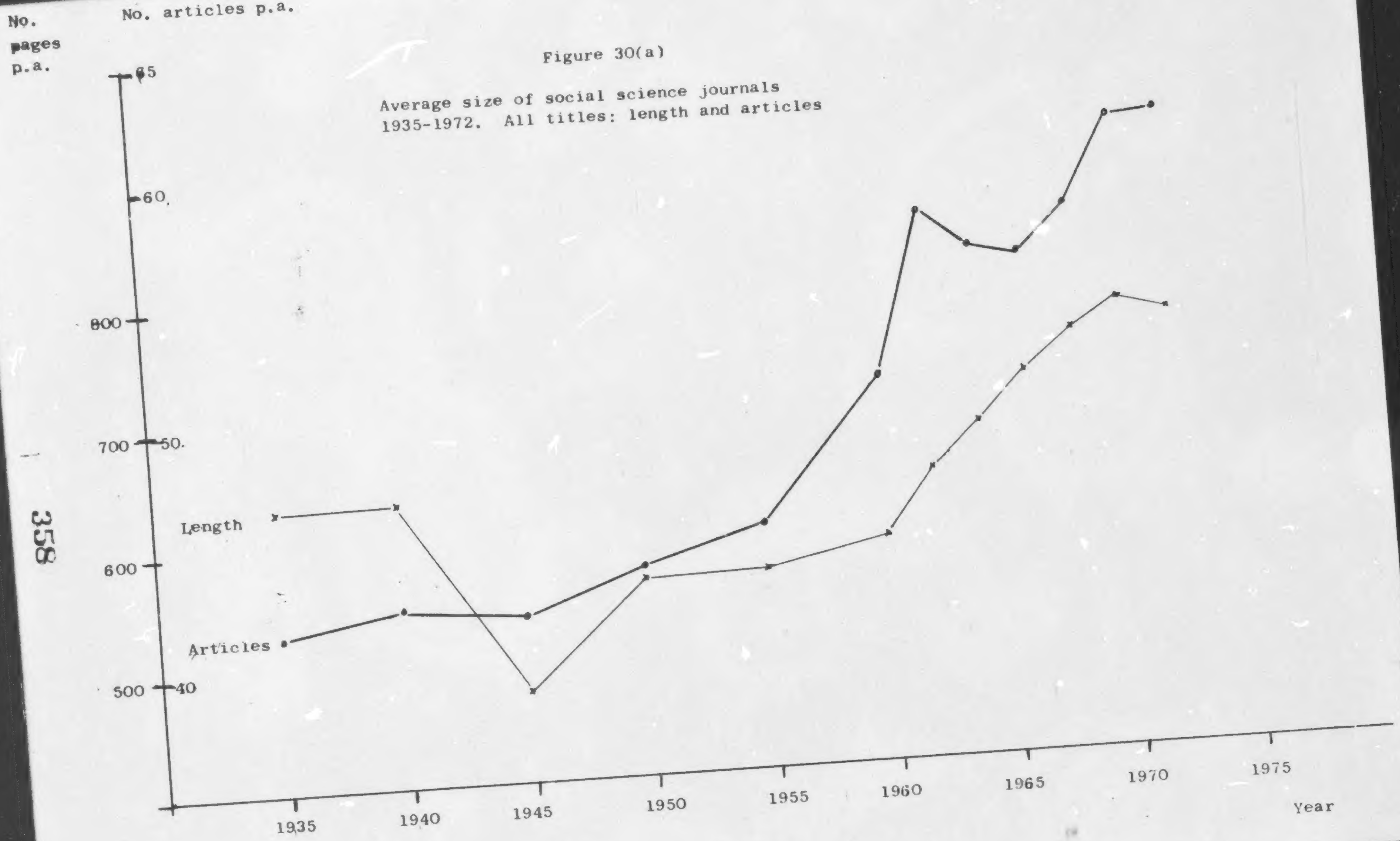
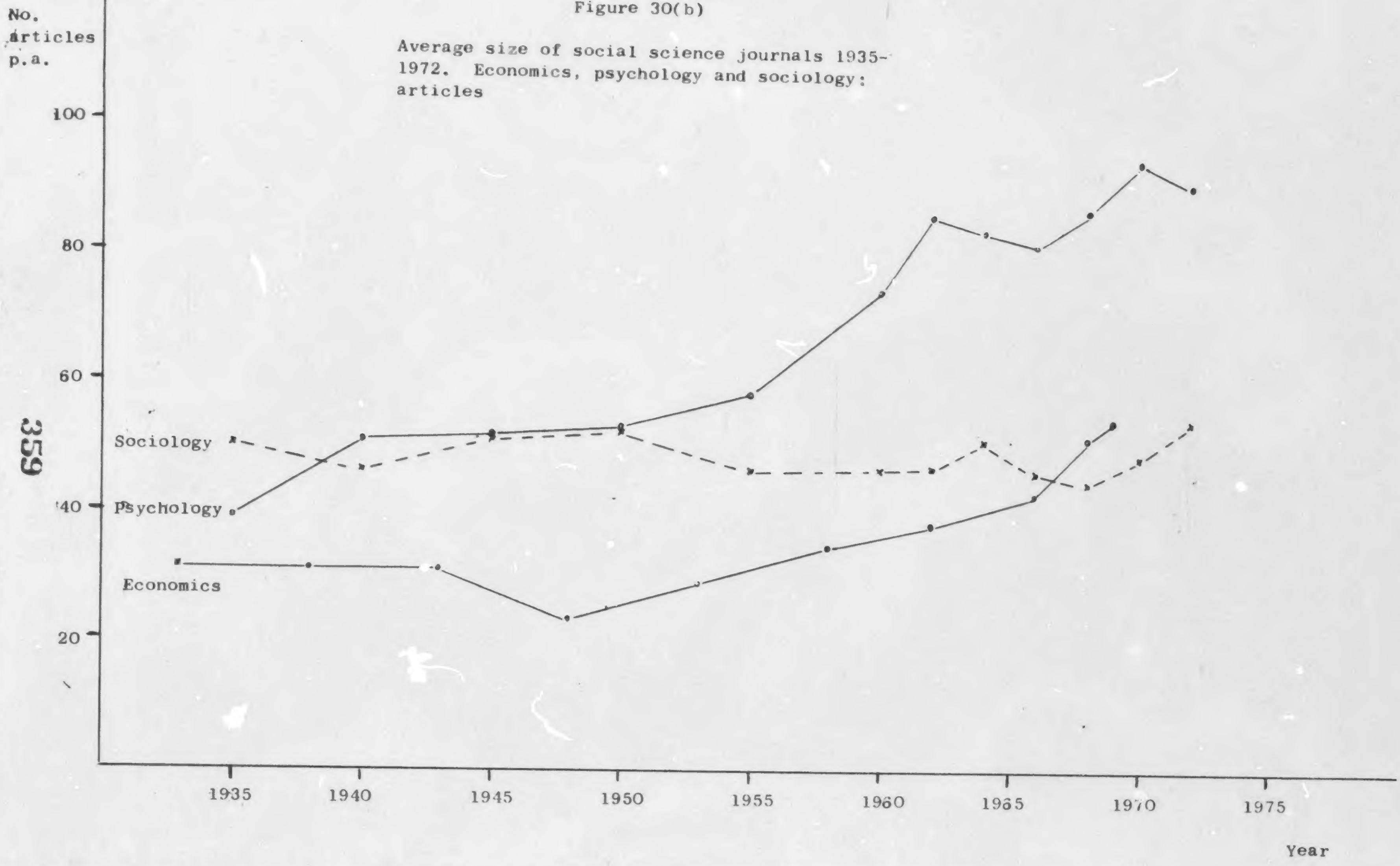


Figure 30(b)

Average size of social science journals 1935-1972. Economics, psychology and sociology: articles



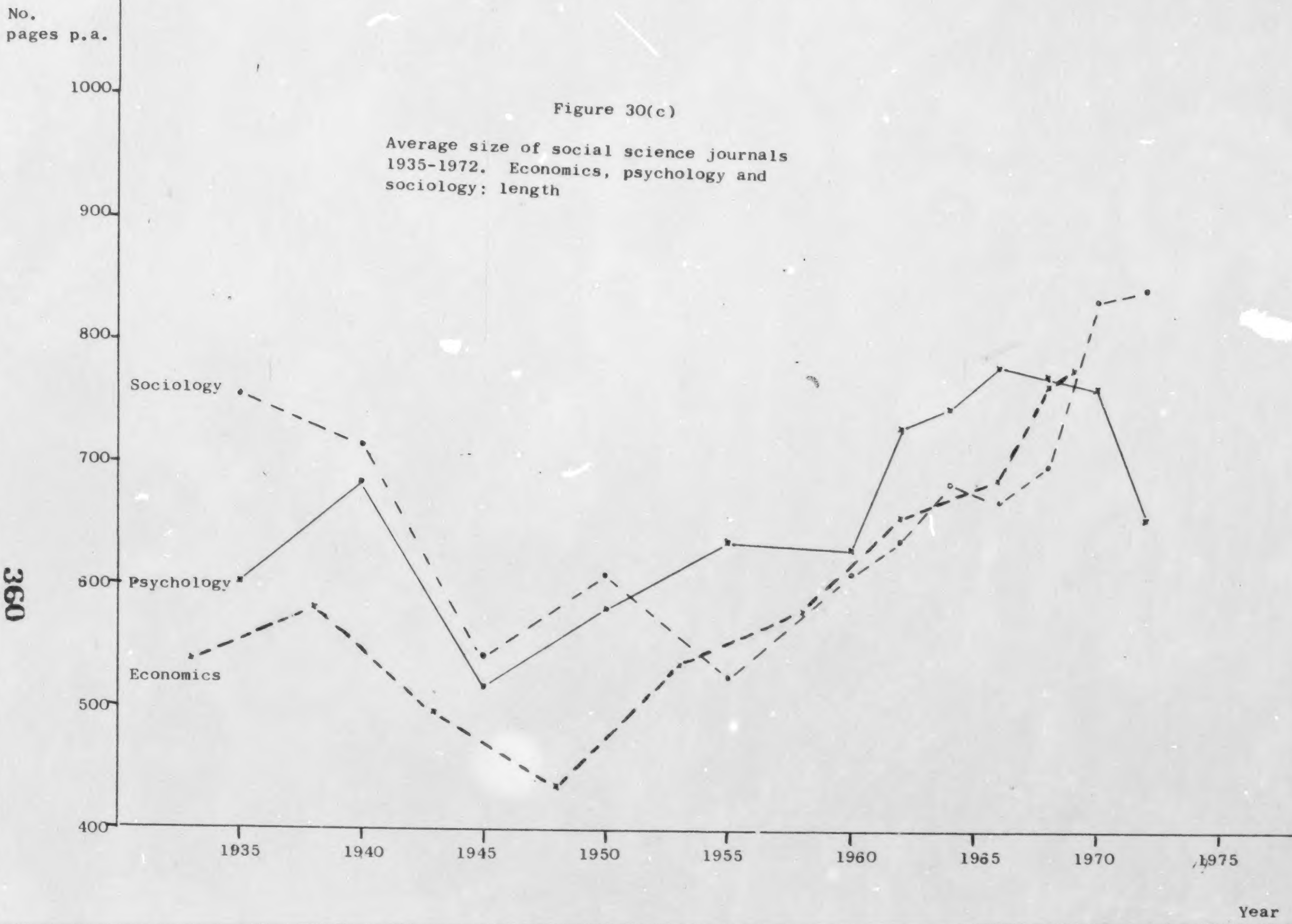


Figure 30(c)

Average size of social science journals 1935-1972. Economics, psychology and sociology: length

Figure 30(d)

Average size of social science journals
1935-1972. UK: articles and length

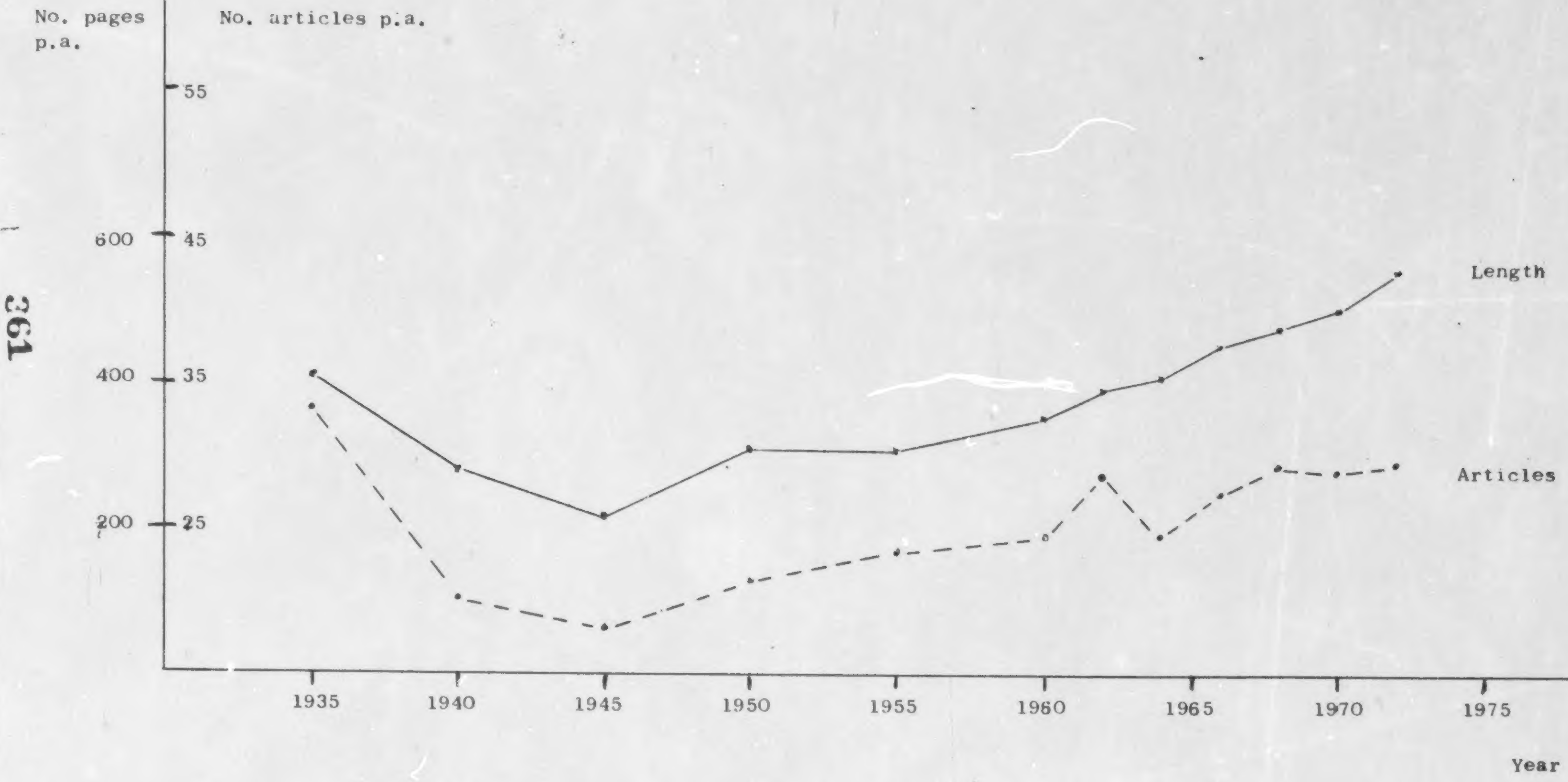
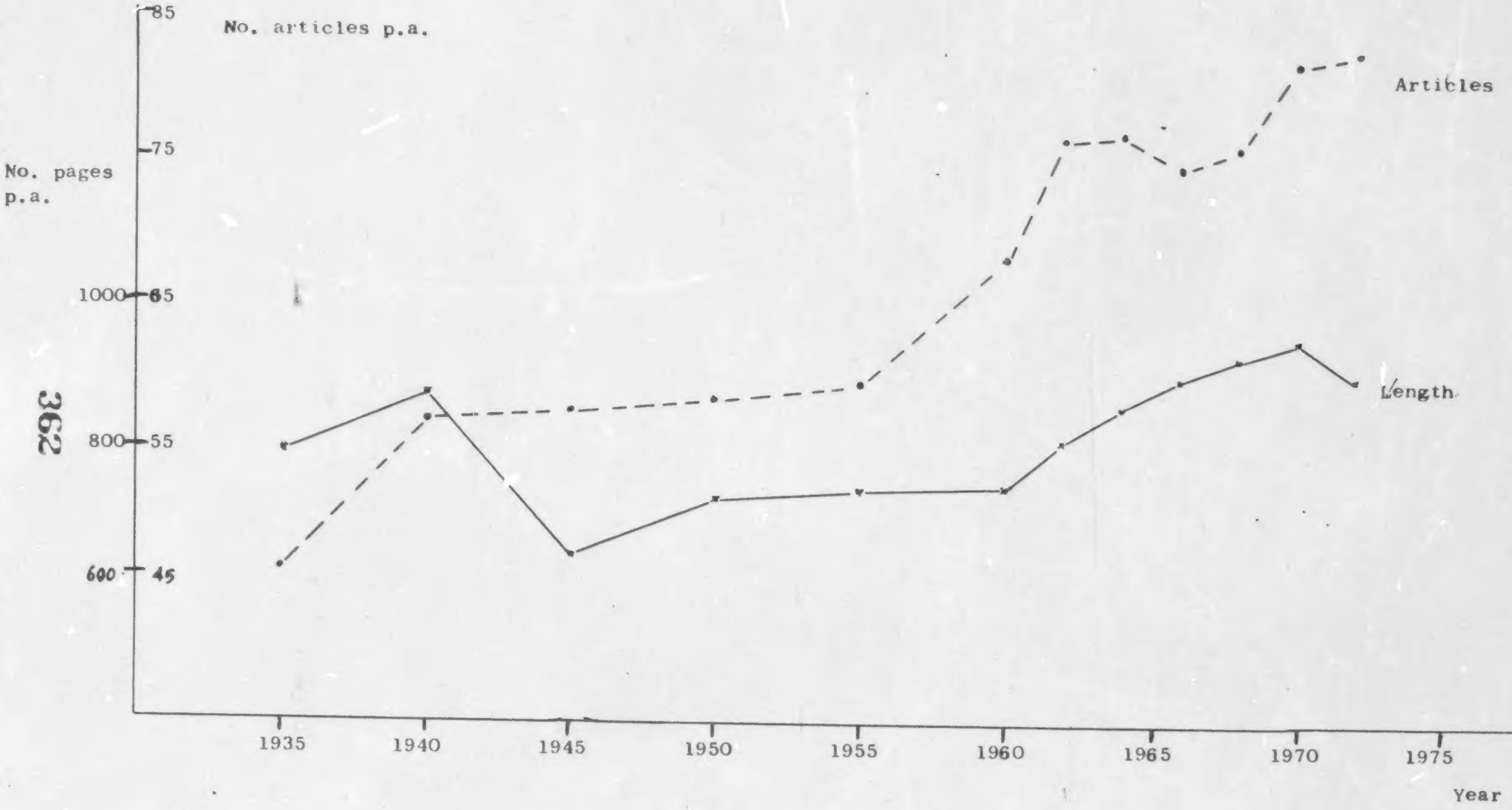


Figure 30(e)

Average size of social science journals
1935-1972. USA: articles and length



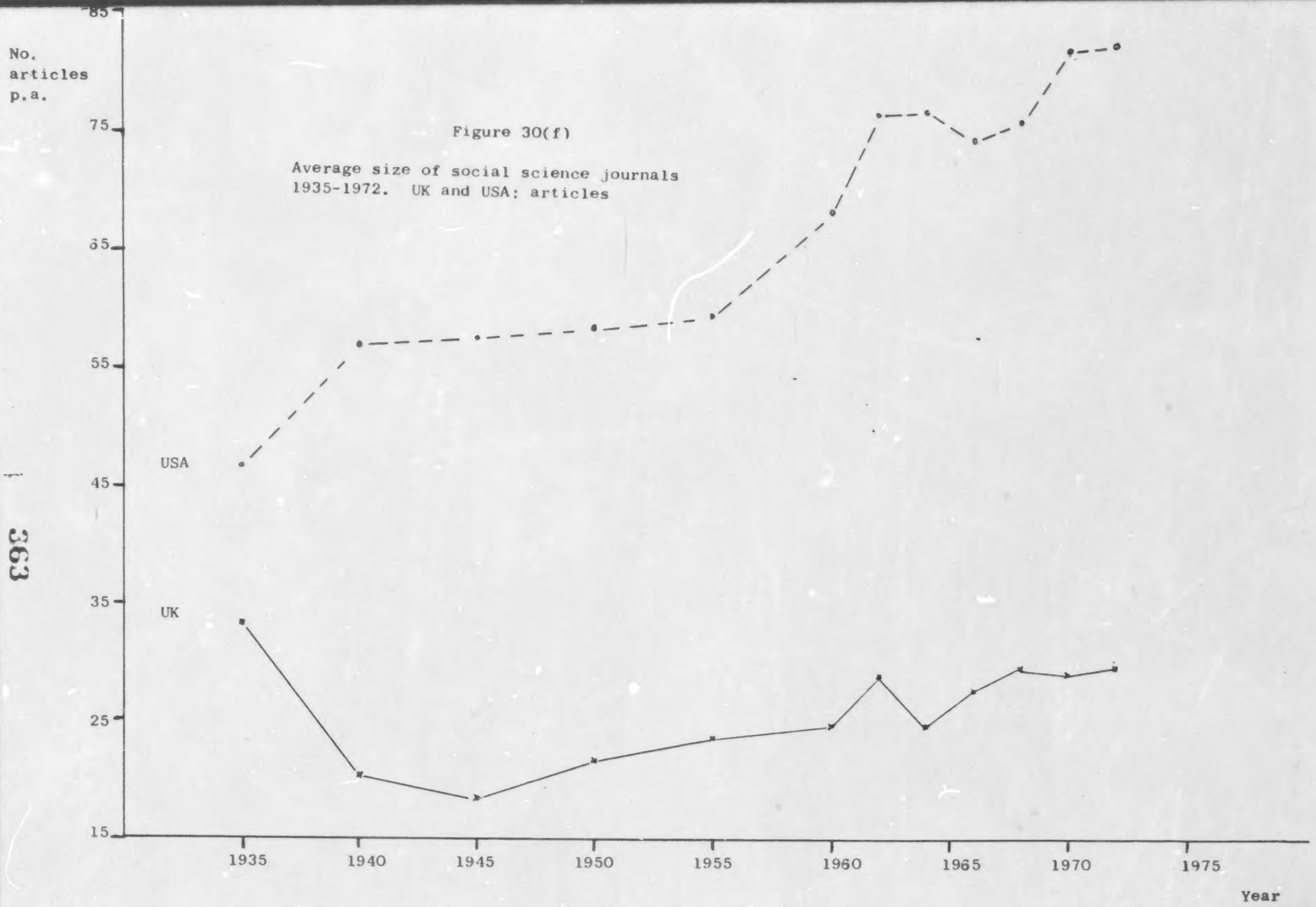


Figure 30(f)

Average size of social science journals 1935-1972. UK and USA: articles

Figure 30(g)

Average size of social science journals
1935-1972. UK and USA: length

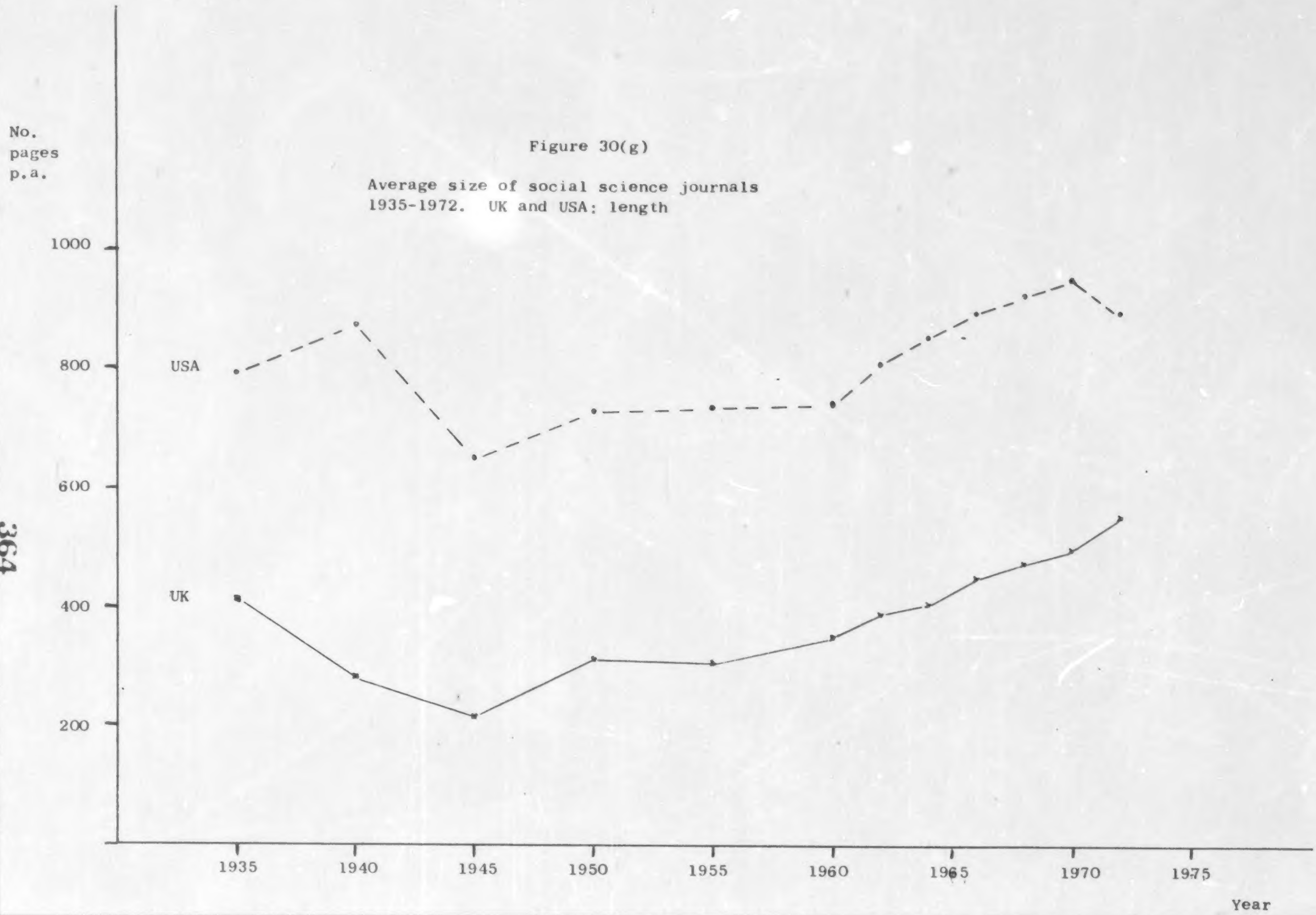


Figure 30(h)

Average size of social science journals 1935-1972. Economics: articles and length (1933-1969).

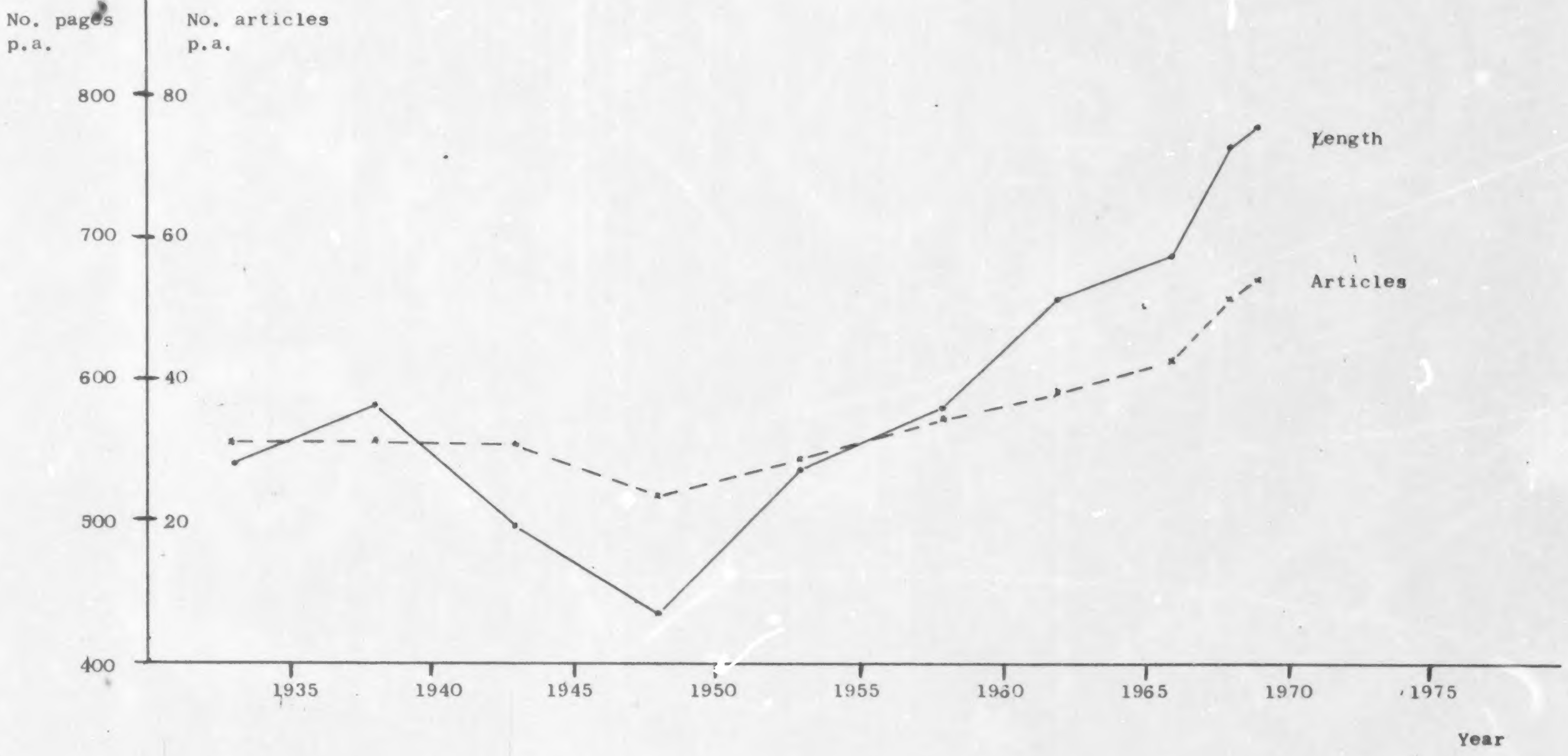


Figure 30(i)

Average size of social science journals
1935-1972. Psychology: articles and length

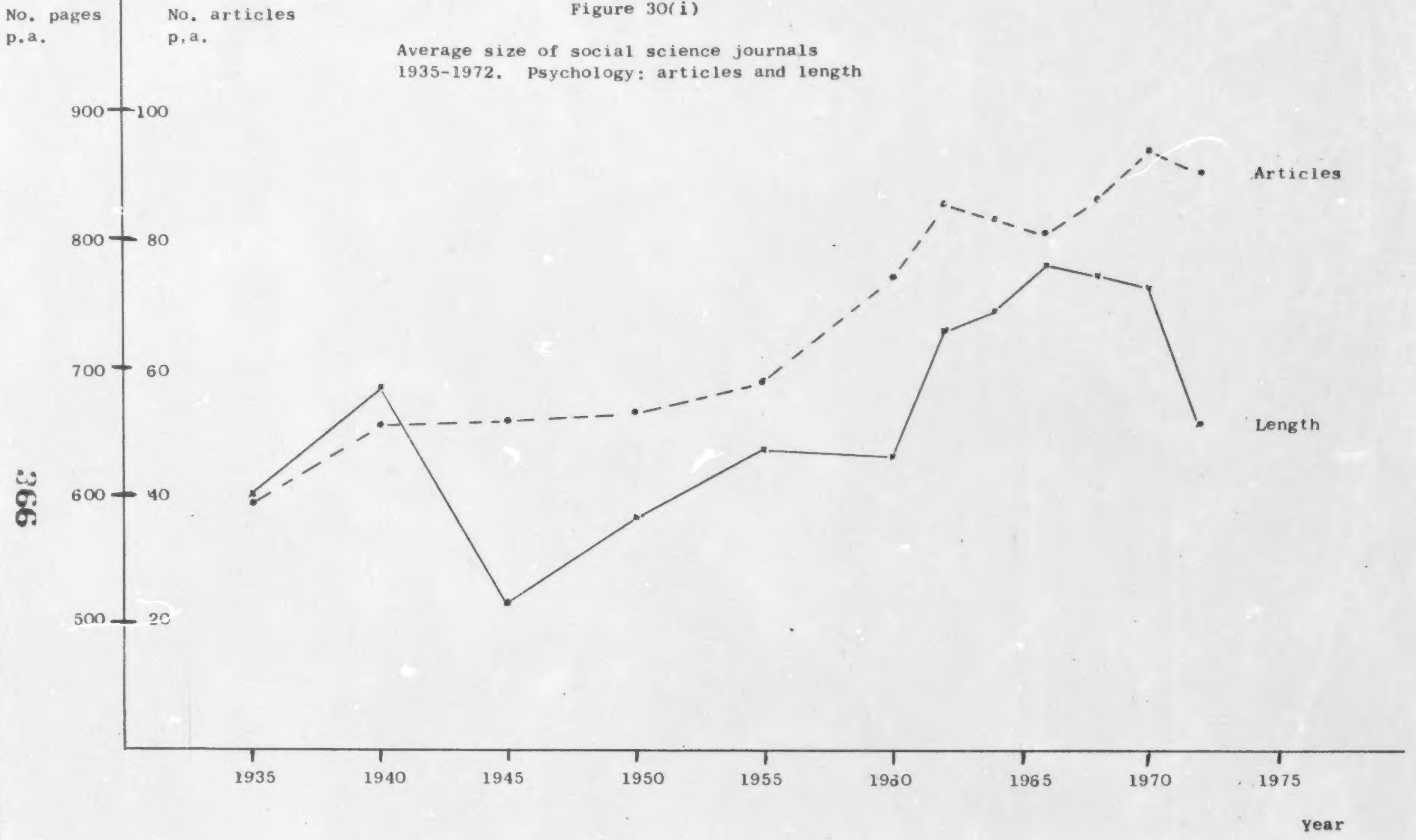
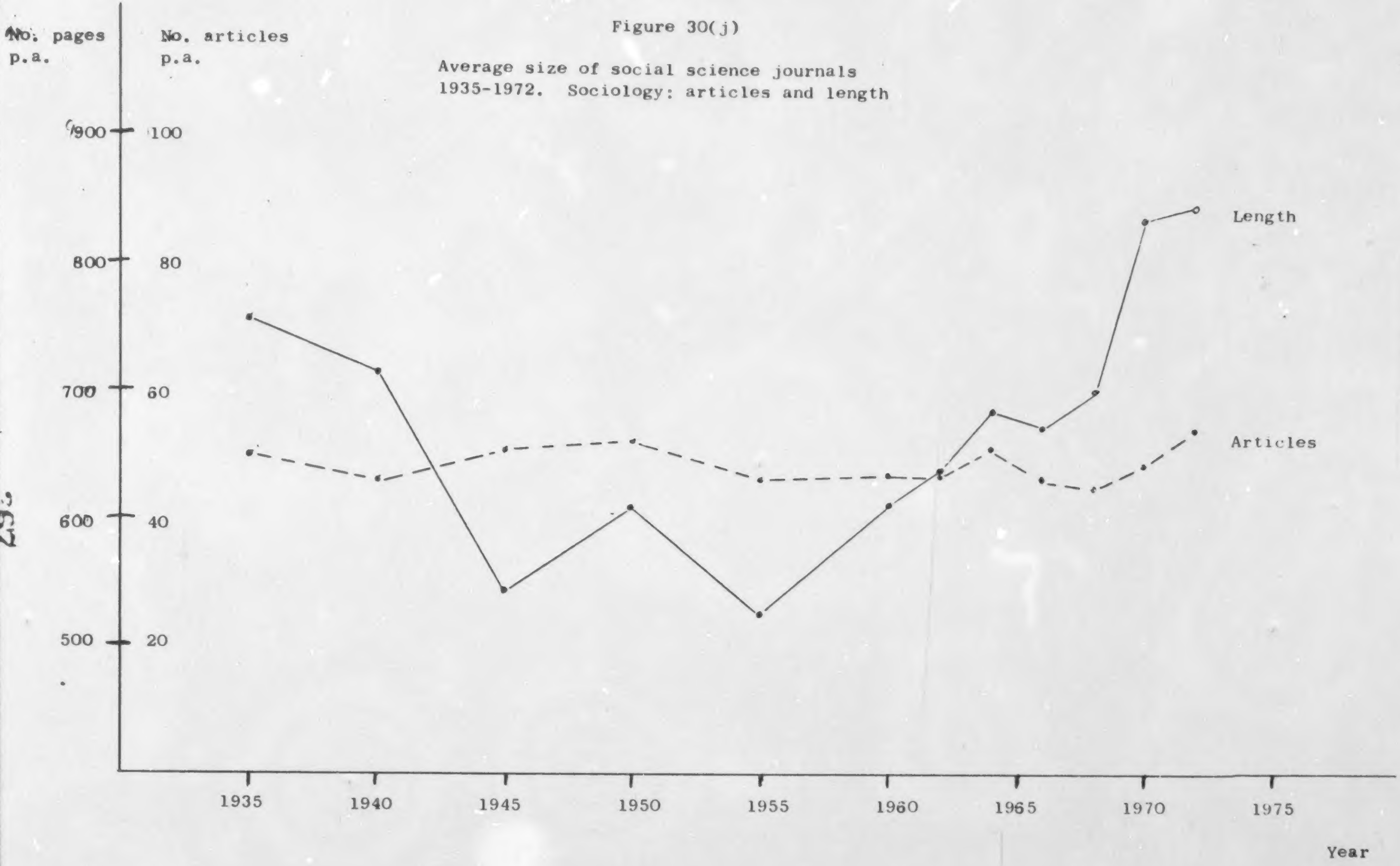


Figure 30(j)

Average size of social science journals
1935-1972. Sociology: articles and length



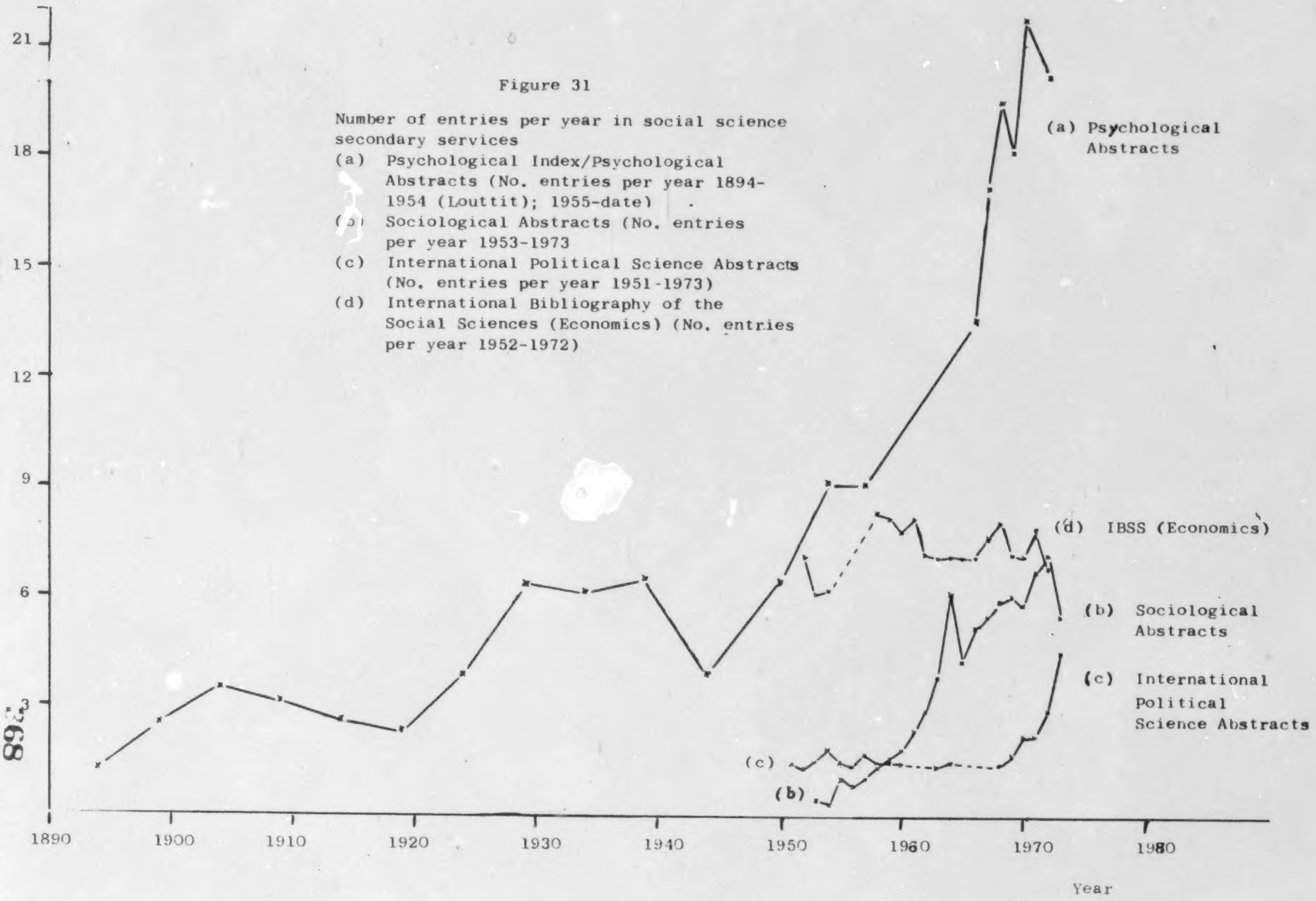


Figure 31

Number of entries per year in social science secondary services

(a) Psychological Index/Psychological Abstracts (No. entries per year 1894-1954 (Louttit); 1955-date)

(b) Sociological Abstracts (No. entries per year 1953-1973

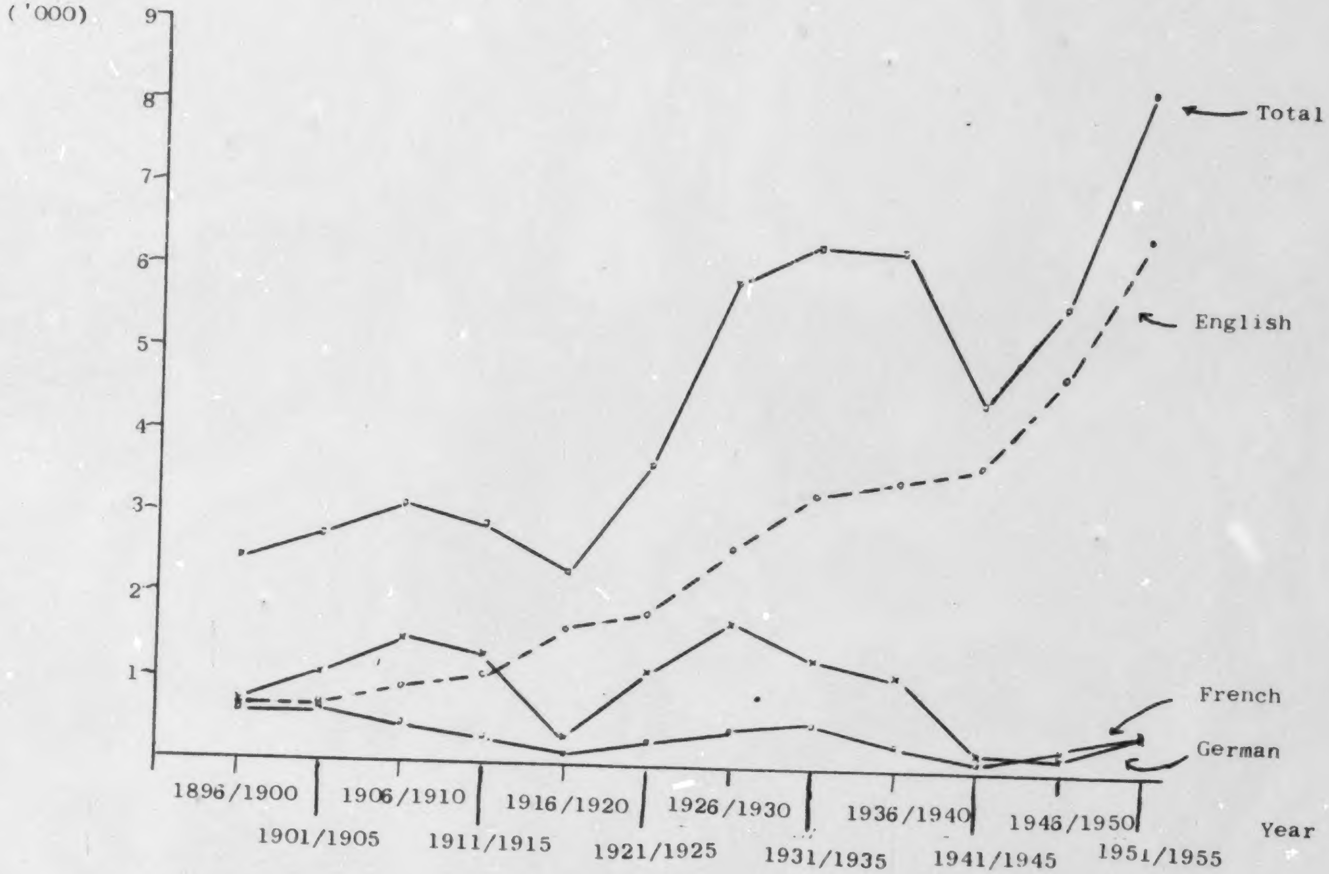
(c) International Political Science Abstracts (No. entries per year 1951-1973)

(d) International Bibliography of the Social Sciences (Economics) (No. entries per year 1952-1972)

21
18
15
12
9
6
3
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
Year
(a) Psychological Abstracts
(d) IBSS (Economics)
(b) Sociological Abstracts
(c) International Political Science Abstracts
(c)
(b)

Figure 32

Number of publications in psychology by language 1896-1955 (Fernberger, in Ben-David and Collins, 1966)



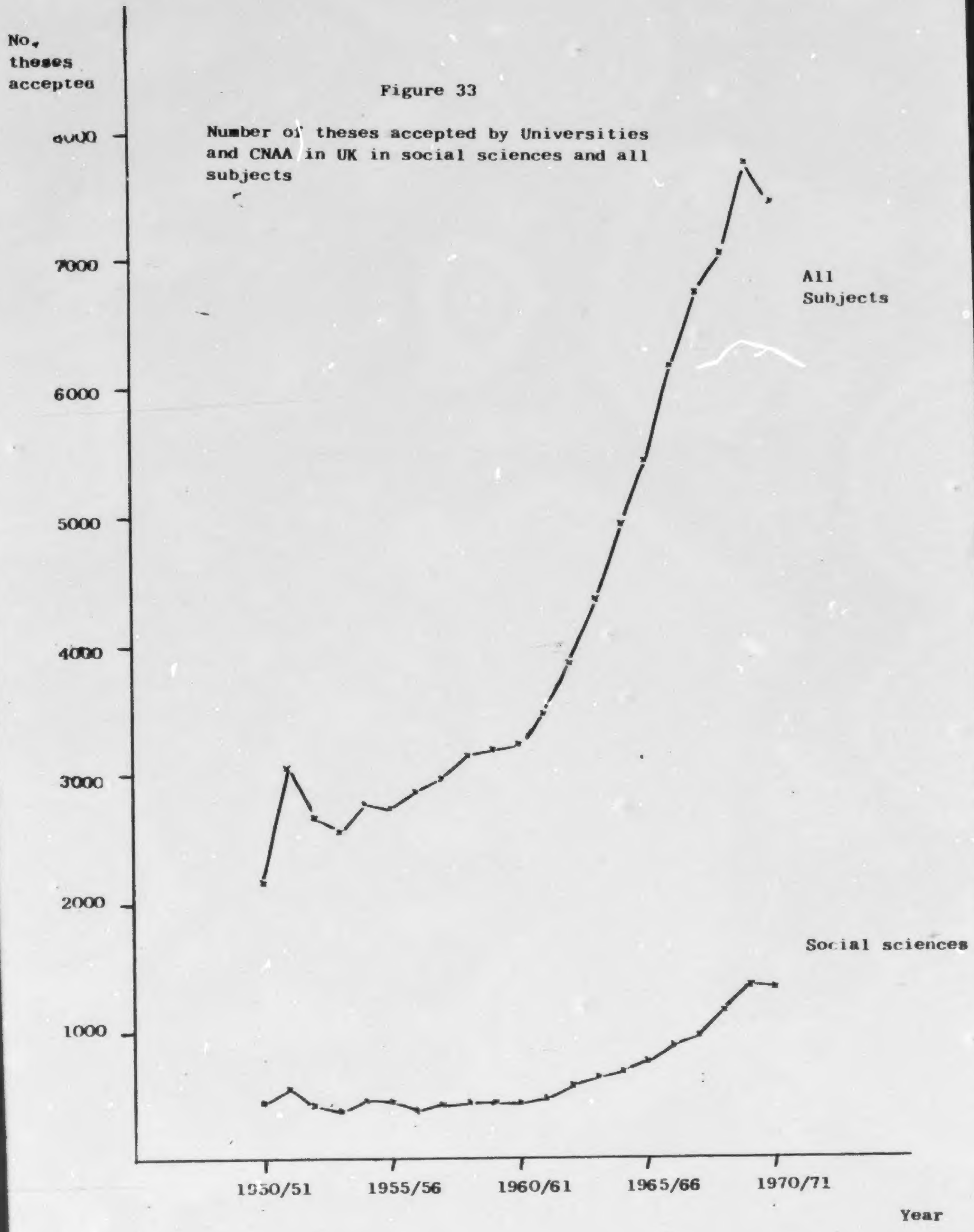
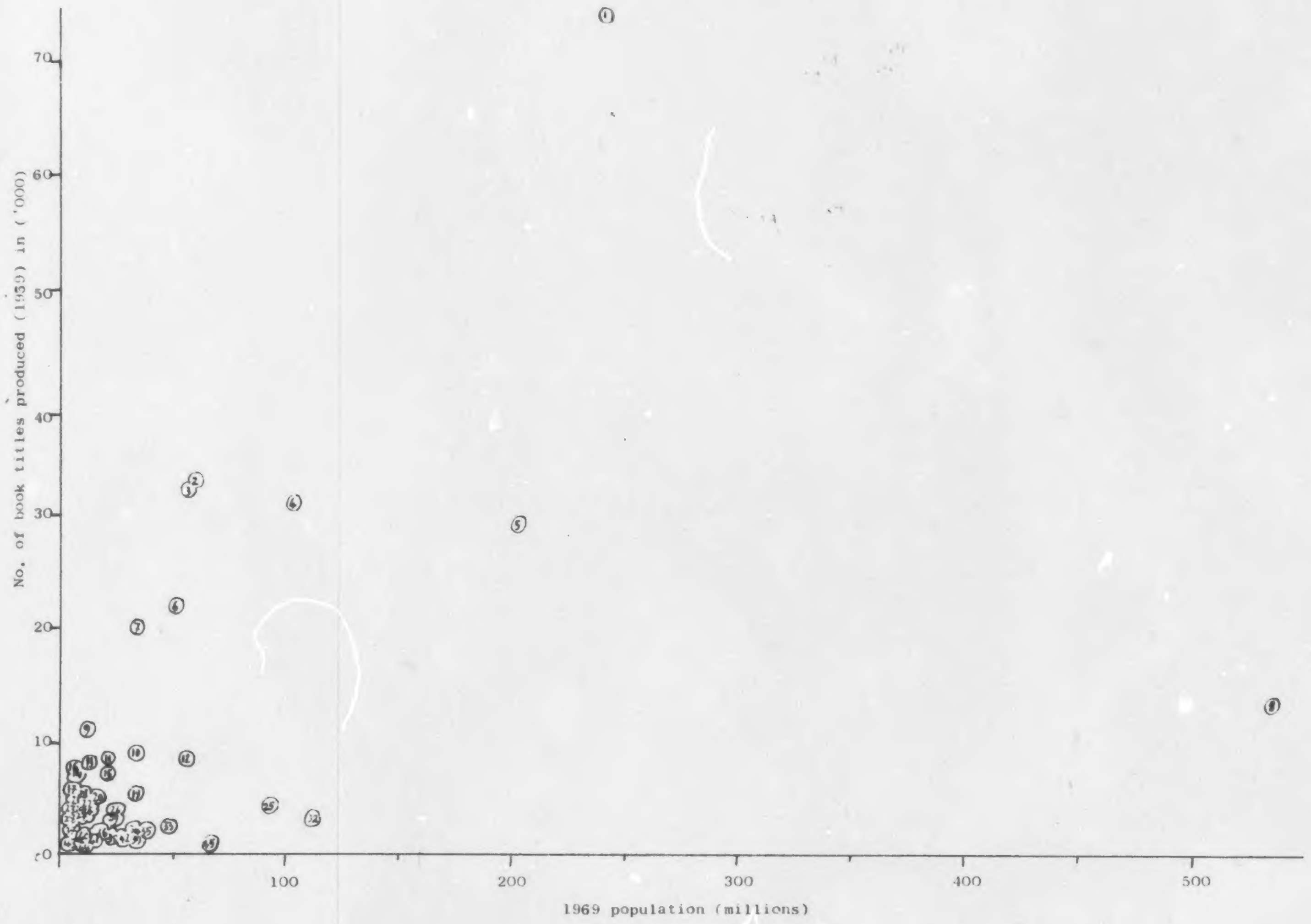


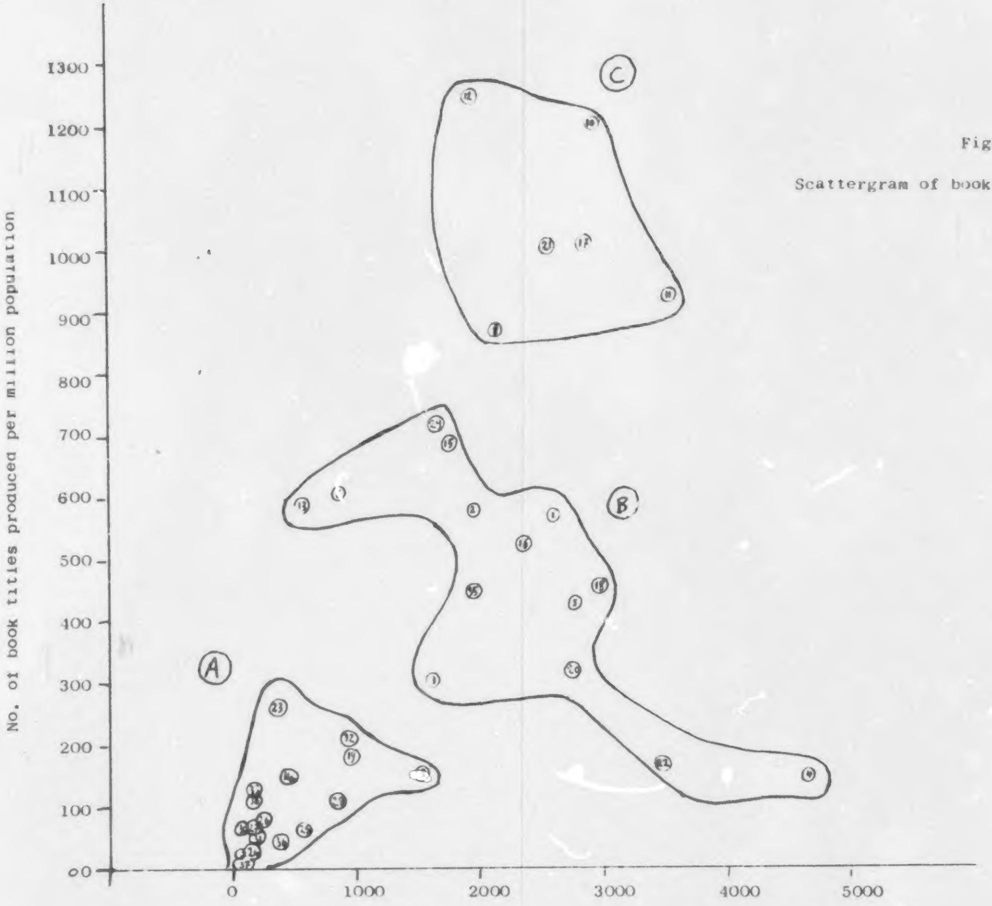
Figure 33

Number of theses accepted by Universities and CNAA in UK in social sciences and all subjects

Figure 34

Scattergram of book production against population





GDP (US $ millions)
per million population

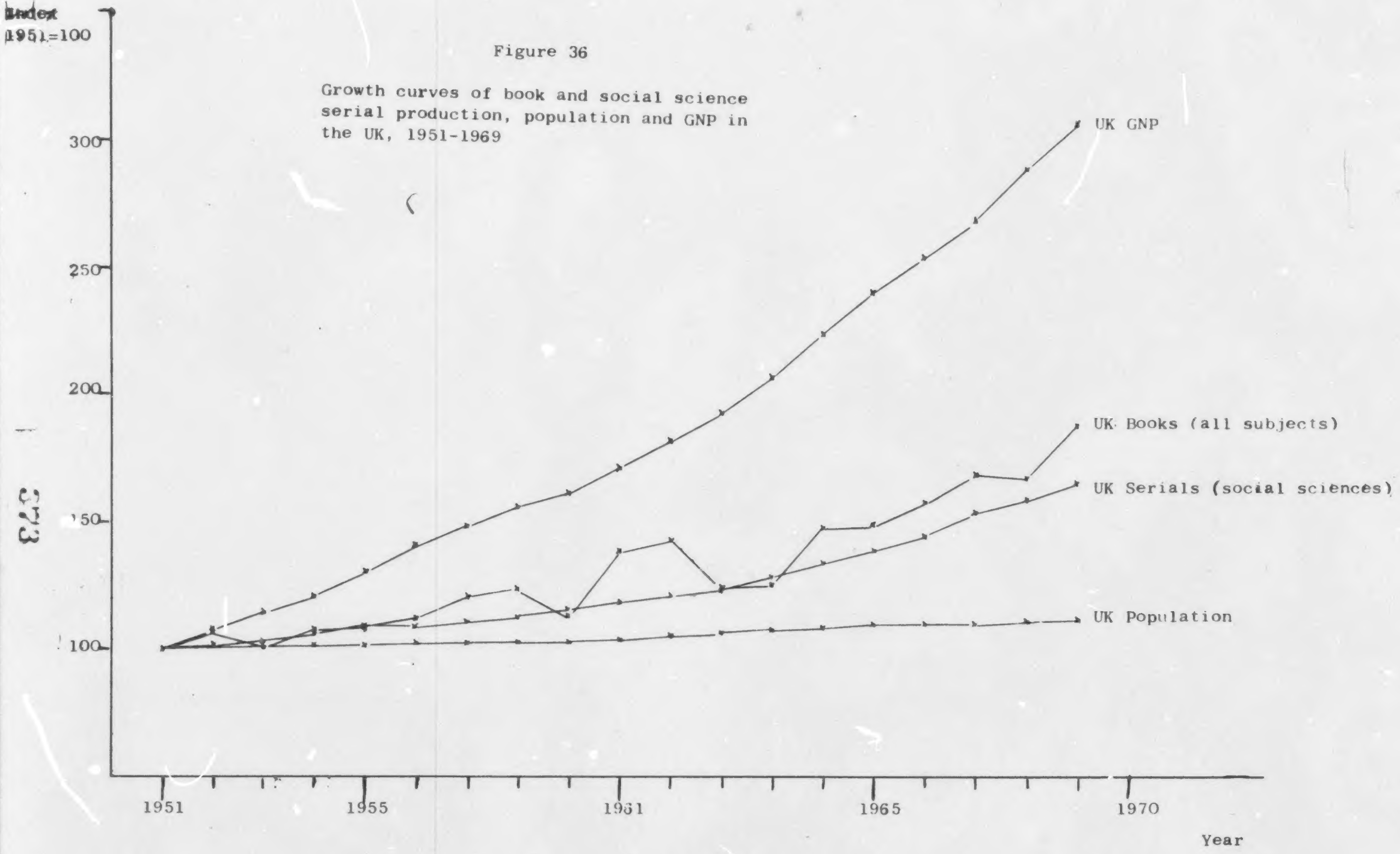
Figure 35

Scattergram of book production against GDP

1	Federal Germany
2	United Kindom
3	Japan
4	USA
5	France
6	Spain
7	India
8	Netherlands
9	Italy
10	Switzerland
11	Sweden
12	Finland
13	Portugal
14	Turkey
15	Austria
16	Belgium
17	Denmark
18	Hungary
19	Argentina
20	Australia
21	Norway
22	Canada
23	Taiwan
24	Pakistan
25	Mexico
26	South Korea
27	Thailand
28	South Africa
29	Israel
30	Burma
31	UAR
32	Greece
33	Sri Lanka
34	Iran
35	New Zealand
36	Chile
37	Nigeria

Figure 36

Growth curves of book and social science serial production, population and GNP in the UK, 1951-1969



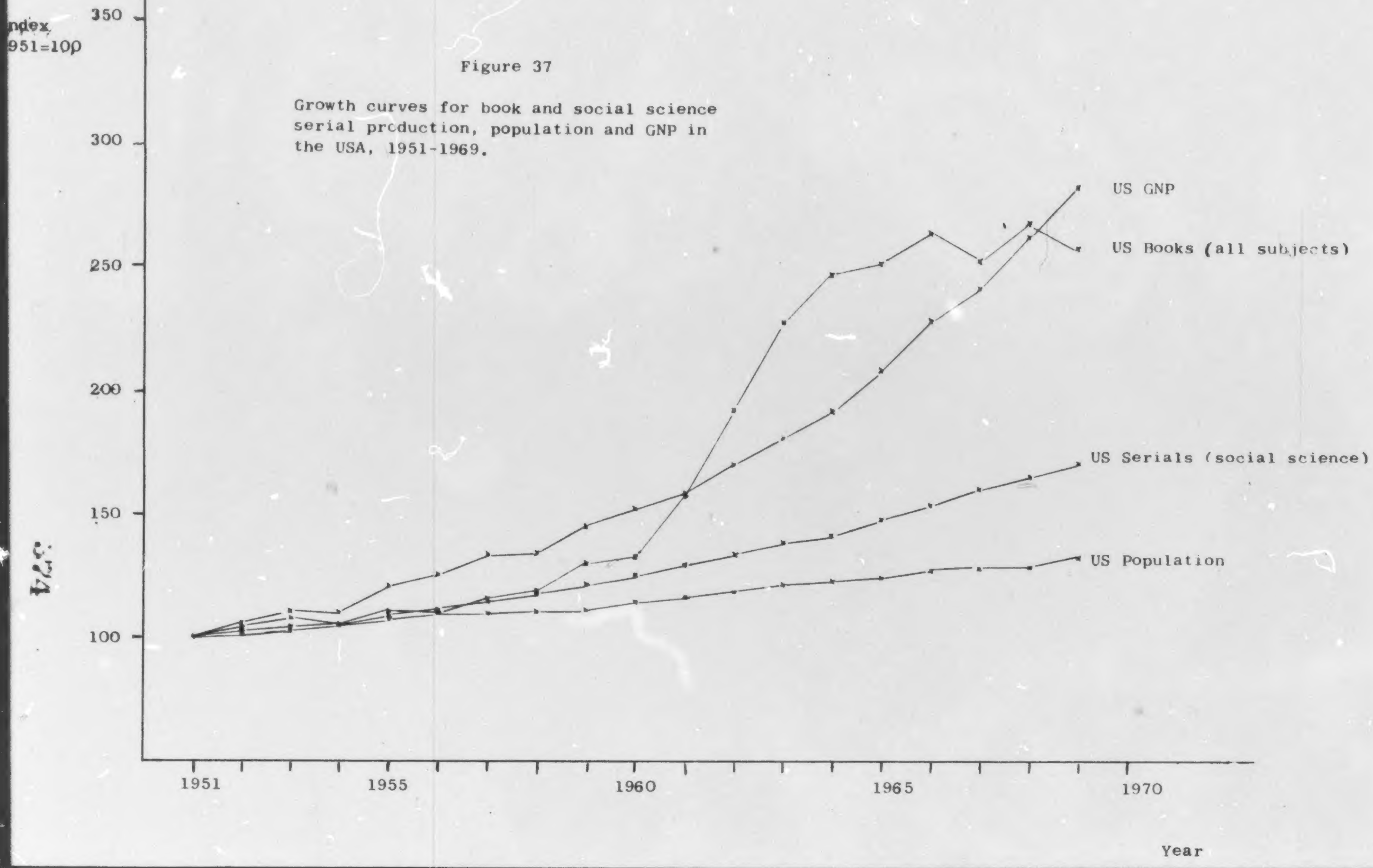
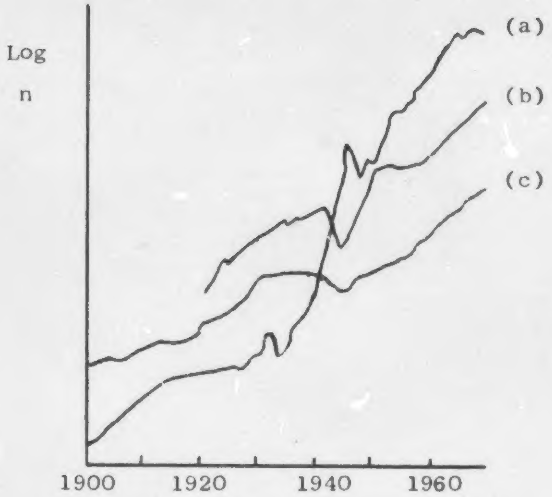


Figure 37

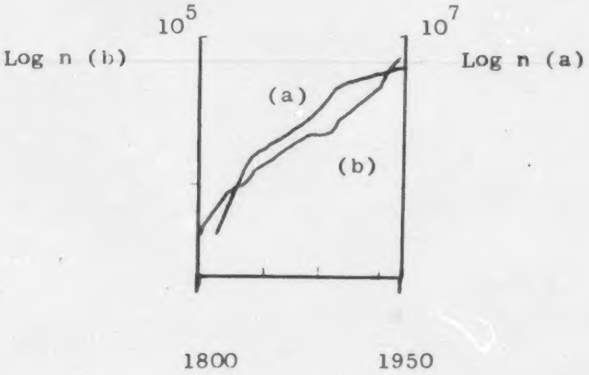
Growth curves for book and social science serial production, population and GNP in the USA, 1951-1969.

Figure 38

Comparison of literature production, and research funding , doctorates and personnel



(a) US $ research funds
(b) Doctorates (c) Papers



(a) Pages

(b) Geologists

Source: After Menard (1971)

Supplementary

Figures

Figure 11

United Kingdom book production 1950-1970.

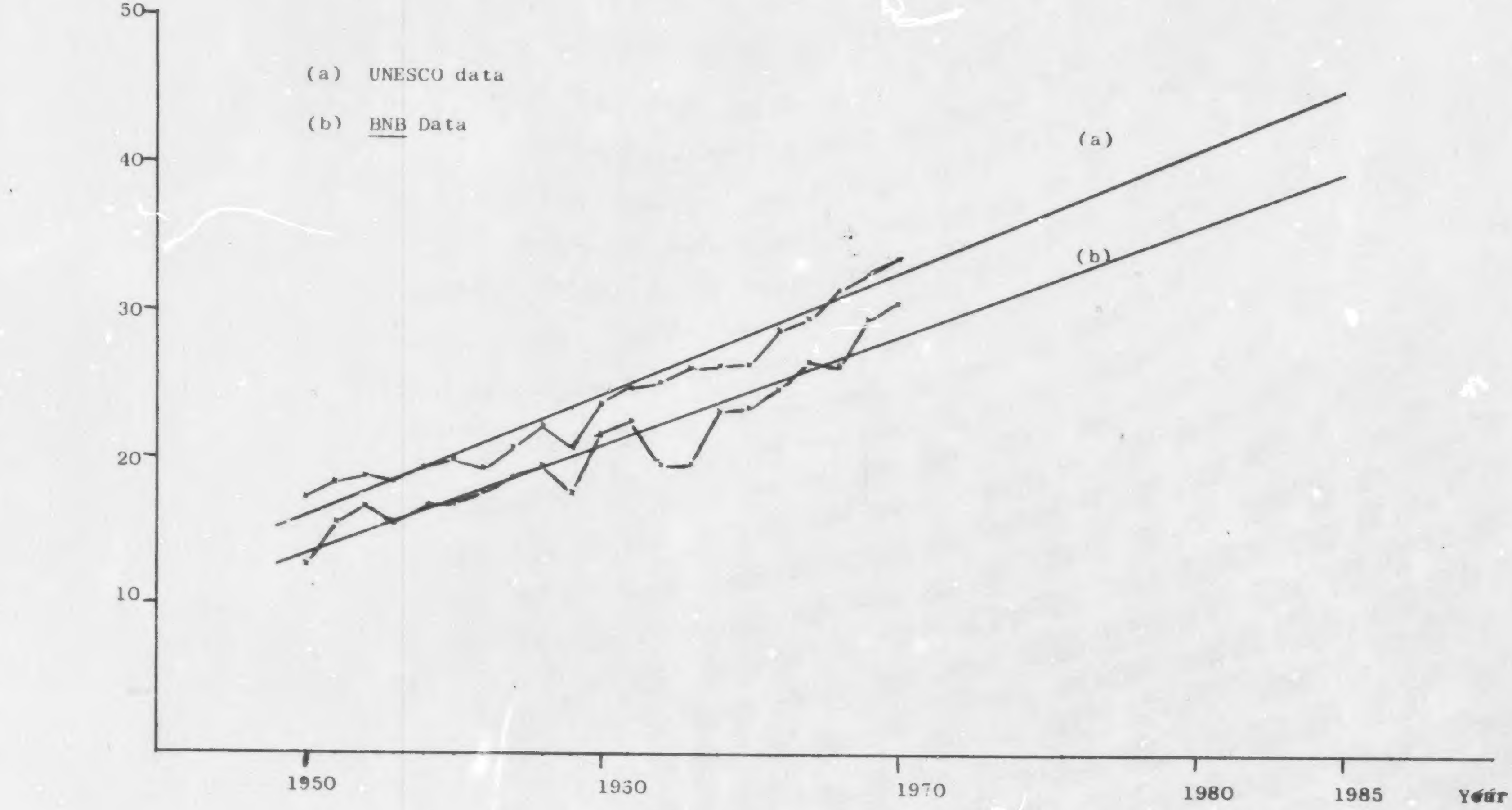


Figure 12

United Kingdom book production 1950-1970
(Total size; excluding fiction, and
'functional' books only).

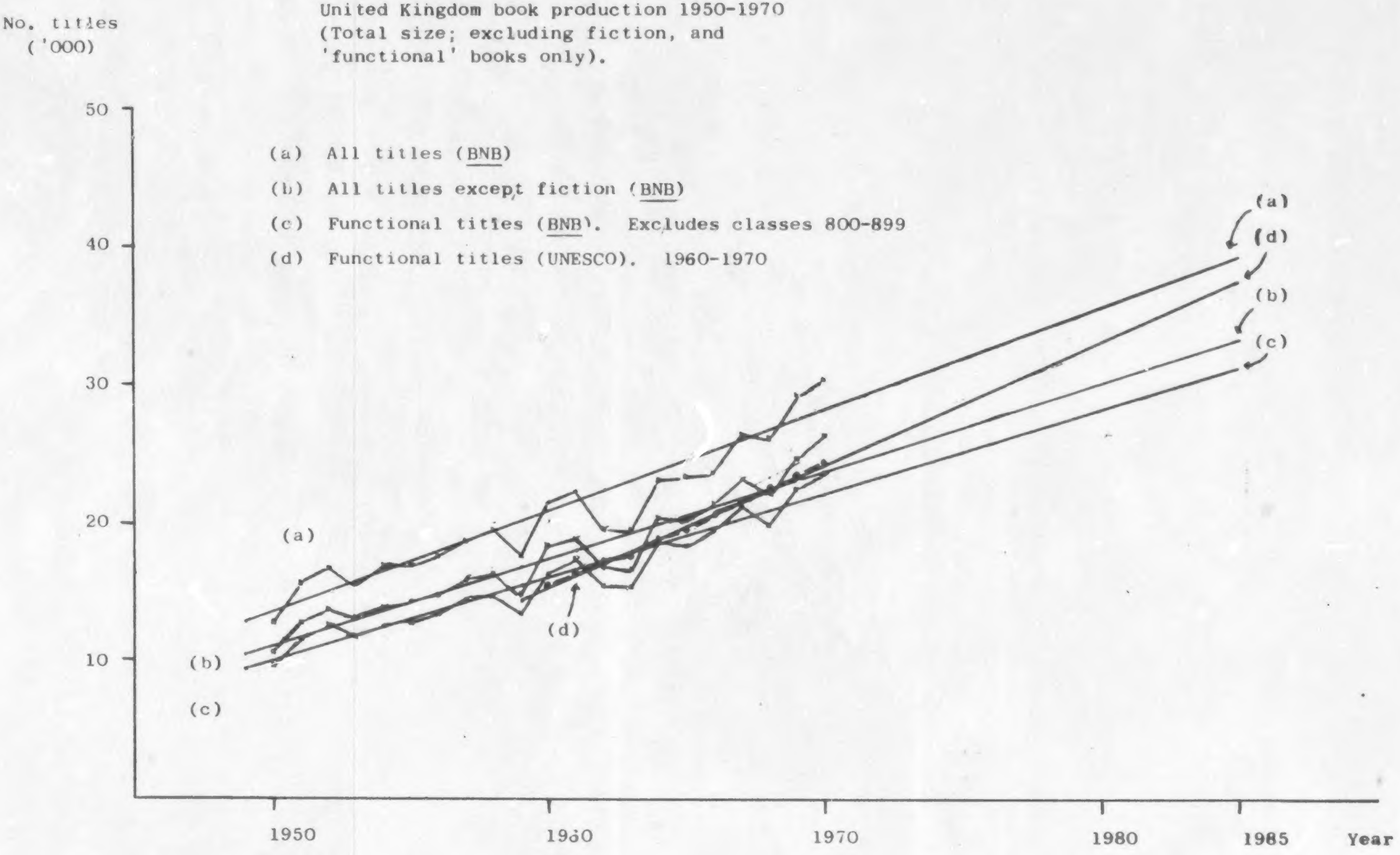
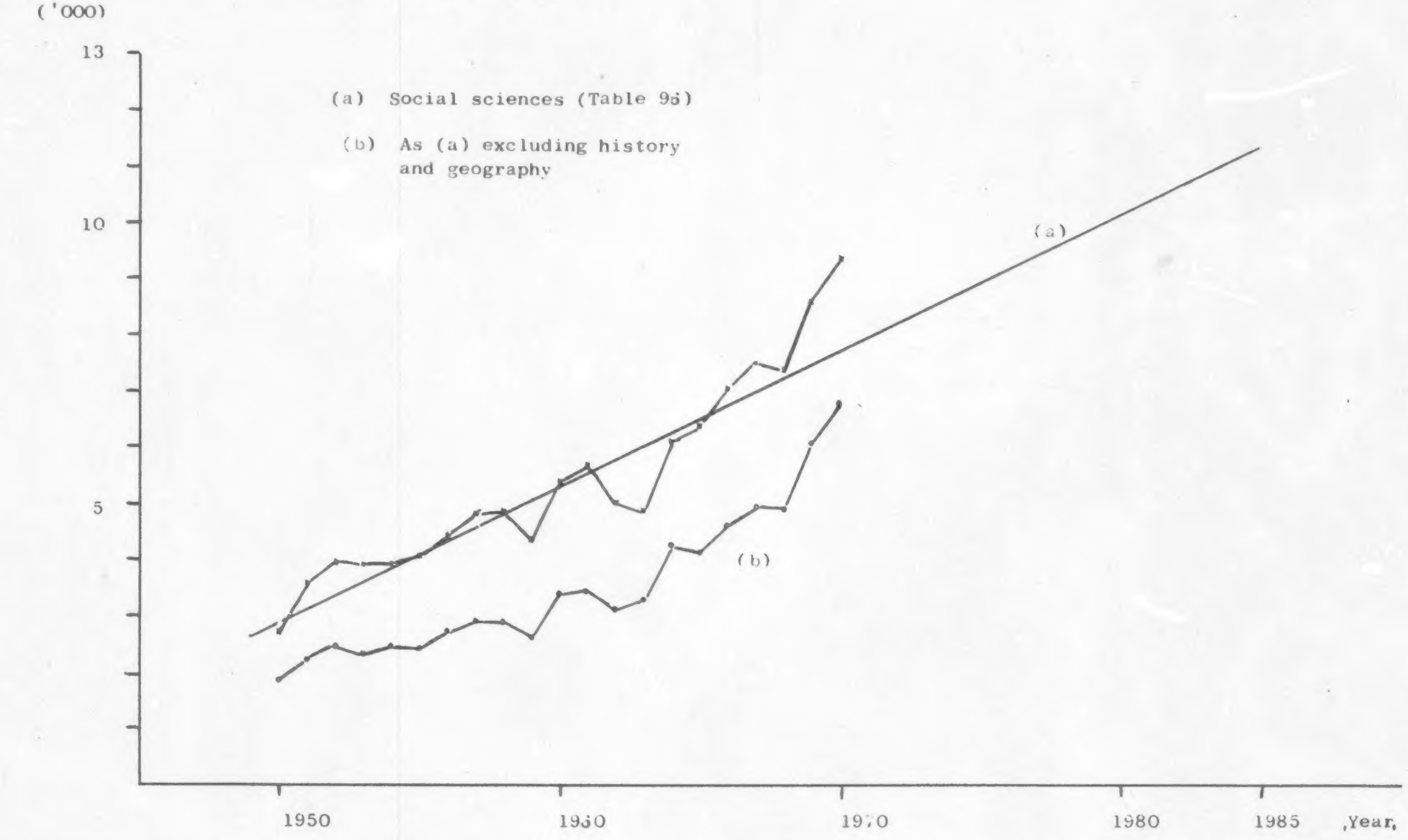


Figure 14

United Kingdom social sciences book production 1950-1970.



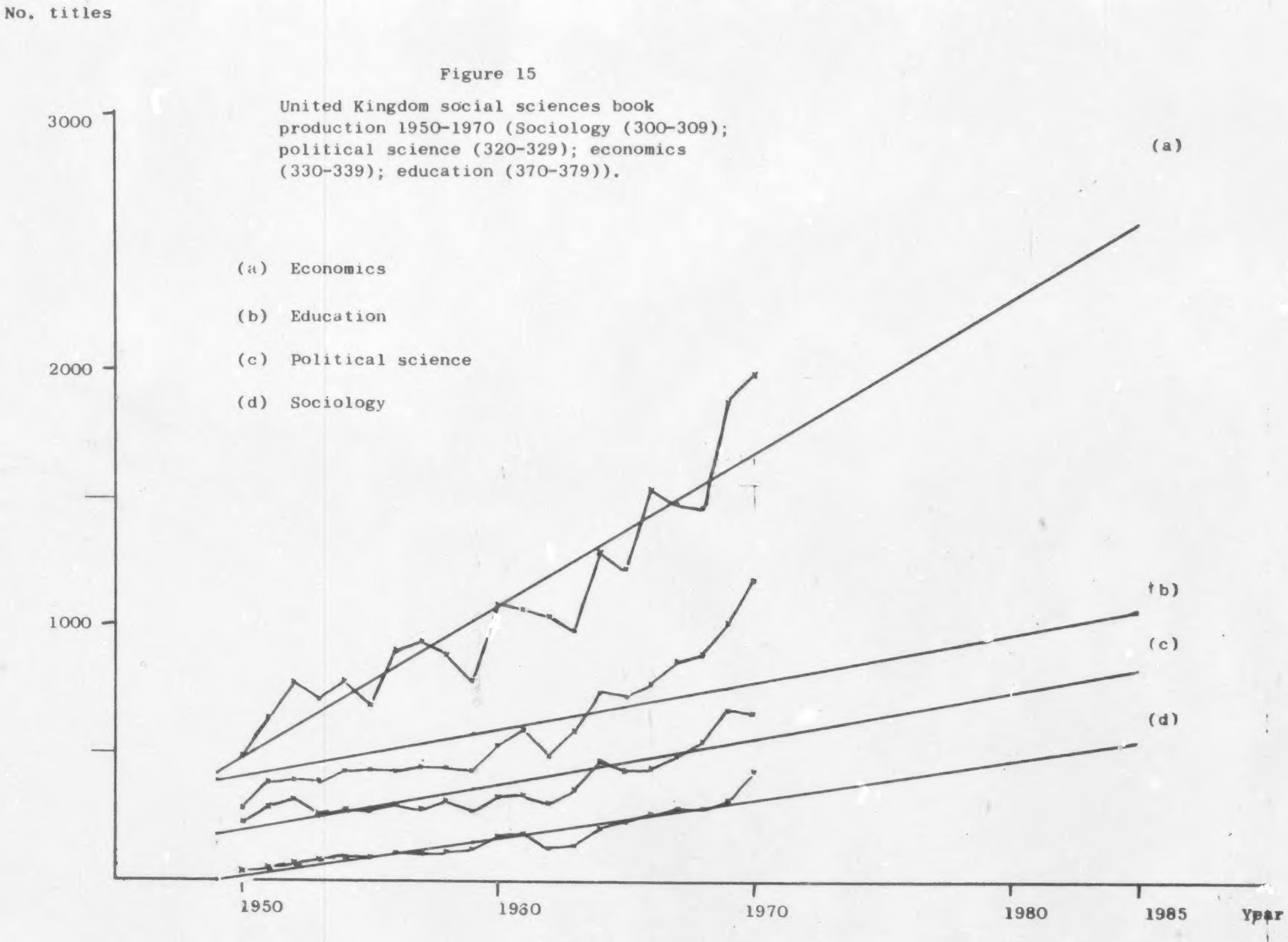
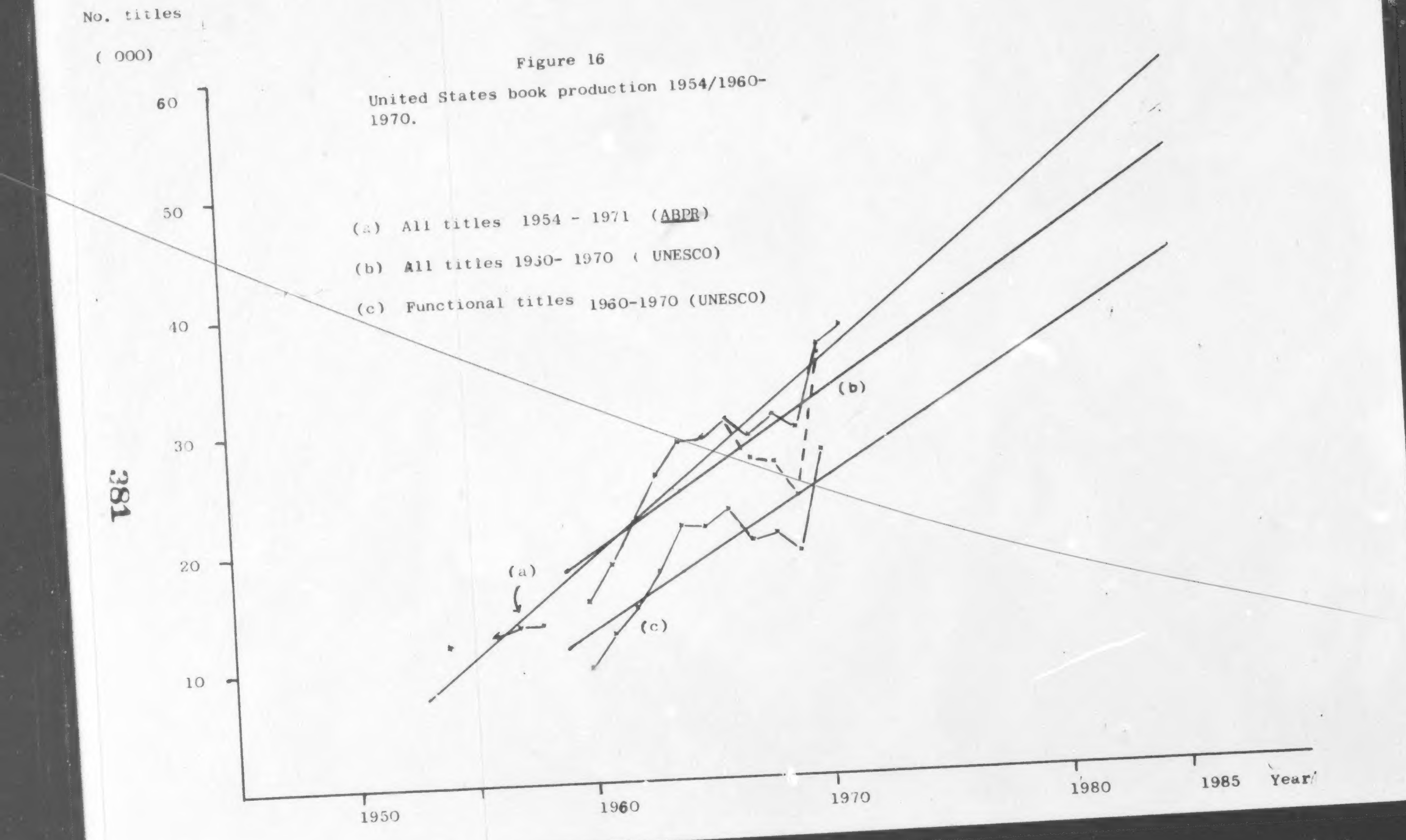


Figure 15

United Kingdom social sciences book production 1950-1970 (Sociology (300-309); political science (320-329); economics (330-339); education (370-379)).

Figure 16

United States book production 1954/1960-1970.



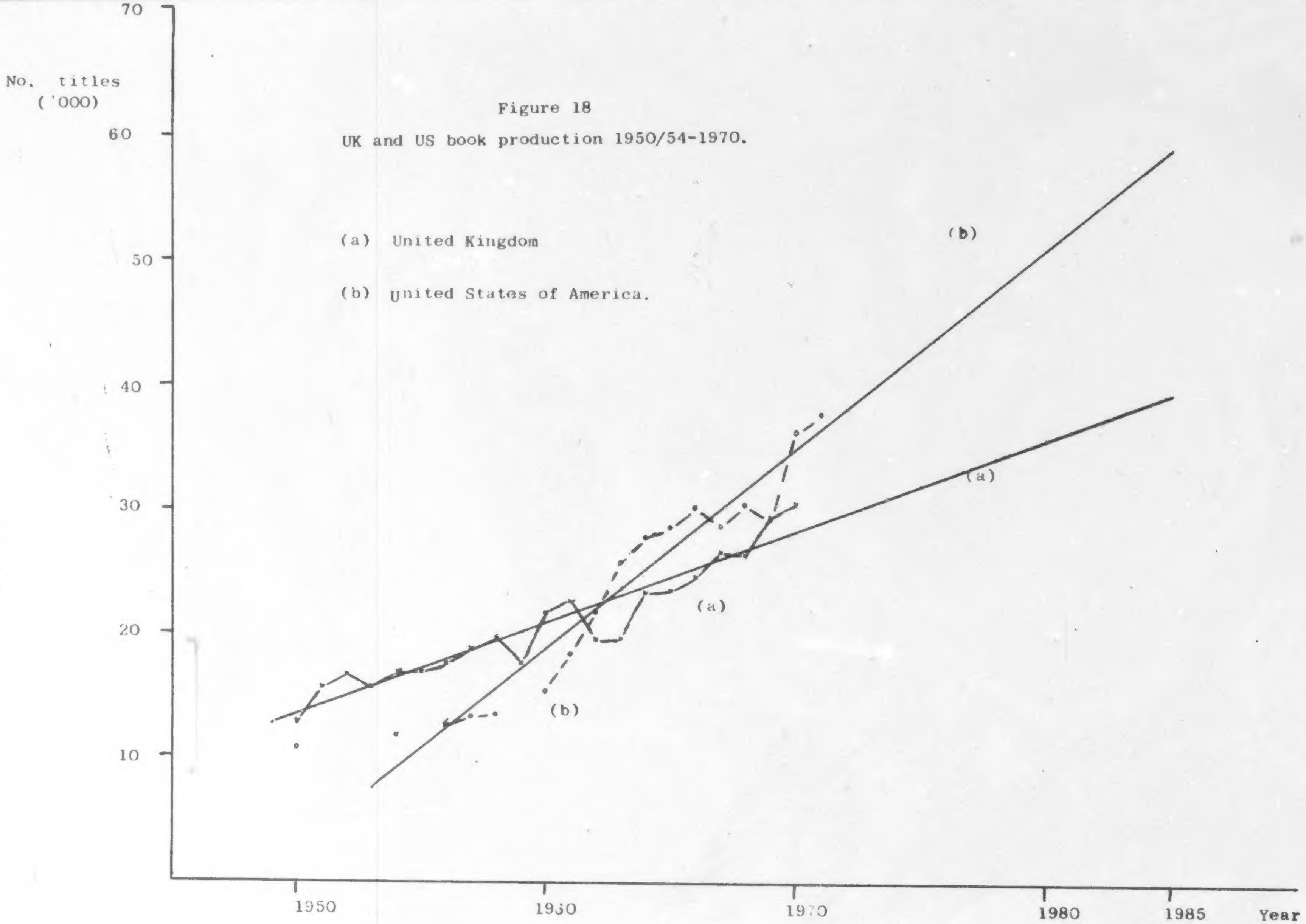


Figure 18

UK and US book production 1950/54-1970.

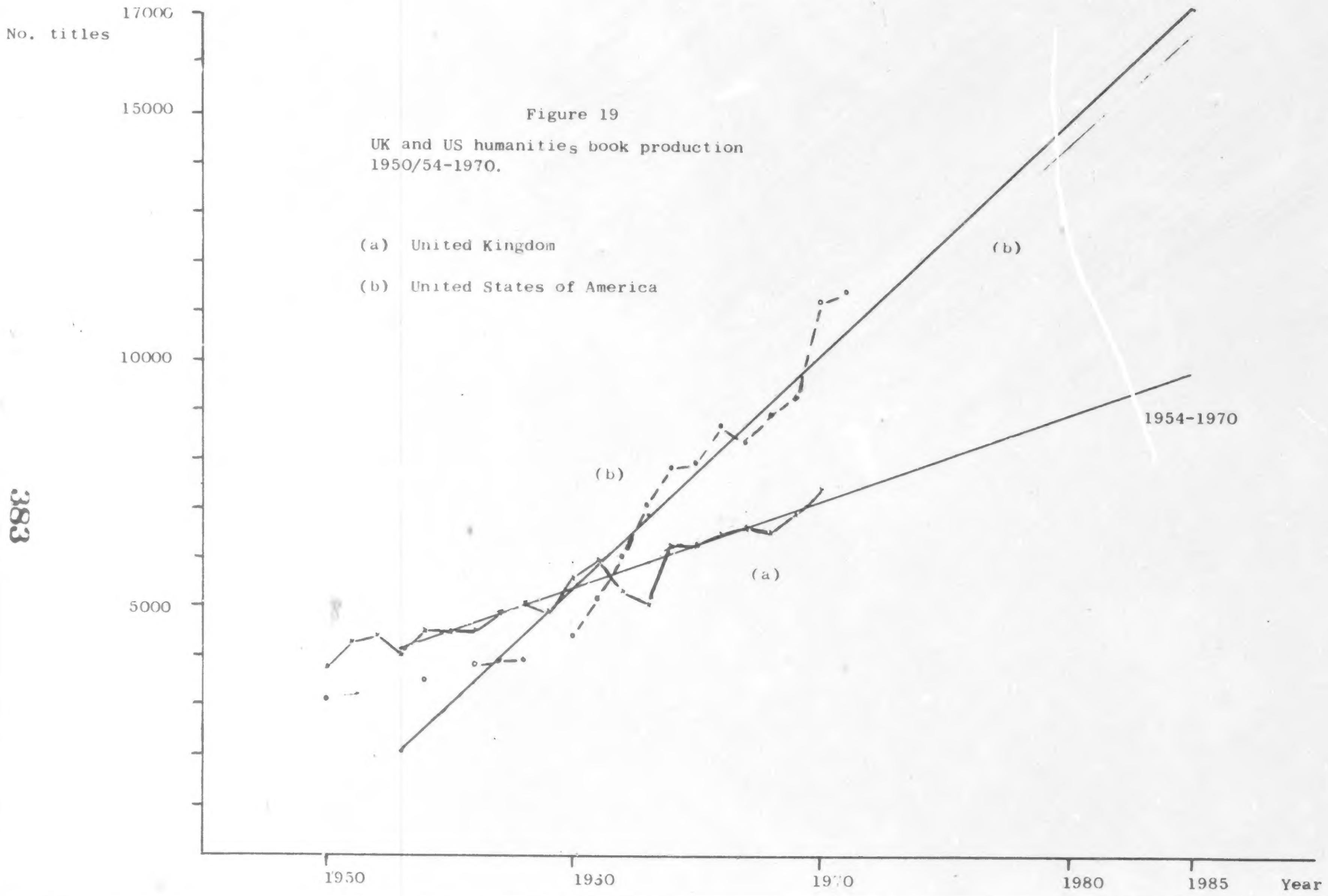


Figure 19

UK and US humanities book production
1950/54-1970.

Figure 20.

UK and US social sciences book production
1950/54-1970.

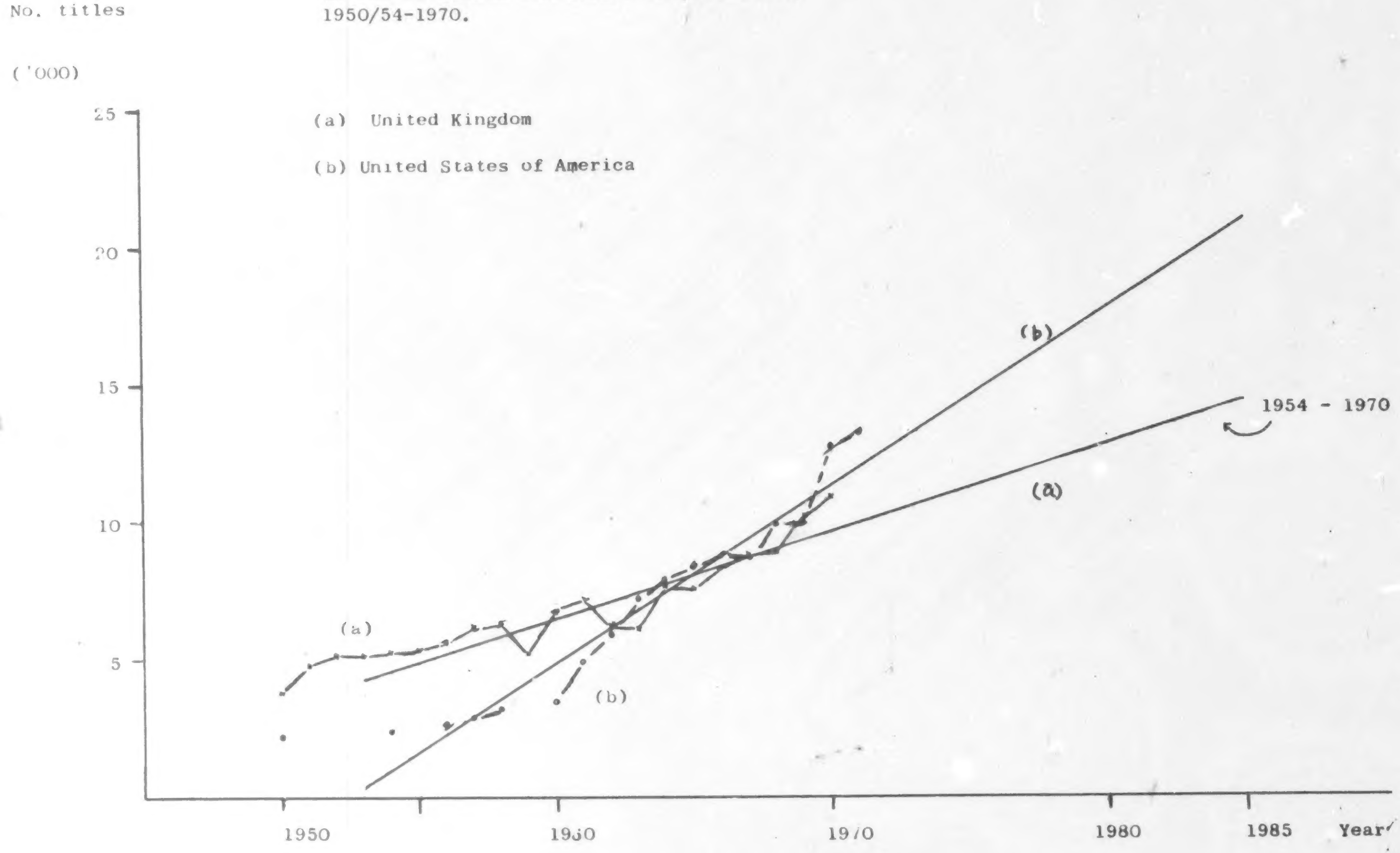


Figure 21

UK and US pure and applied science book production 1950/54-1970.

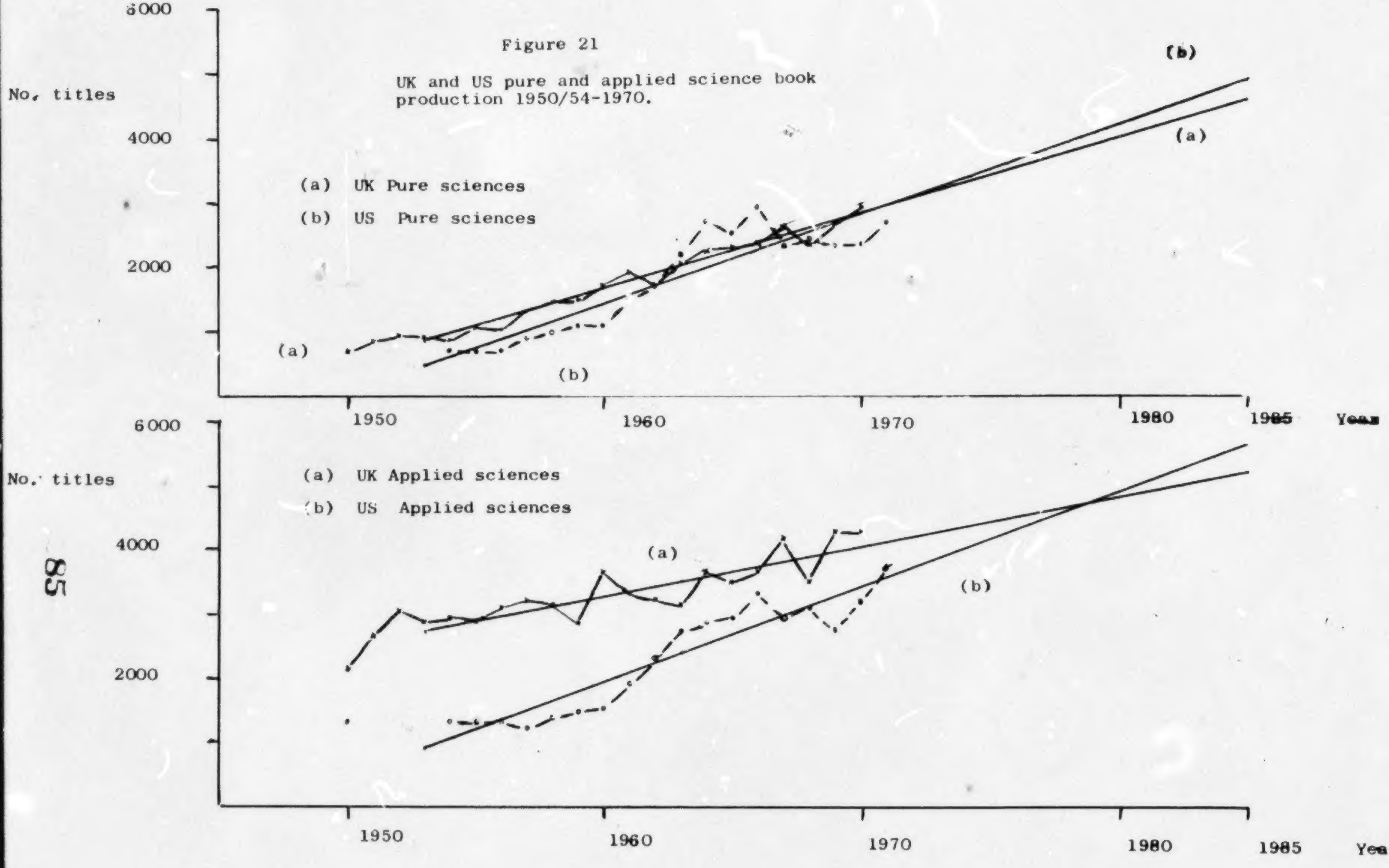


Figure 22

UK and US fiction book production
1950/54-1970.